EXPERT ADVICE AND TIPS FOR EVERY AMIGA ENTHUSIAST

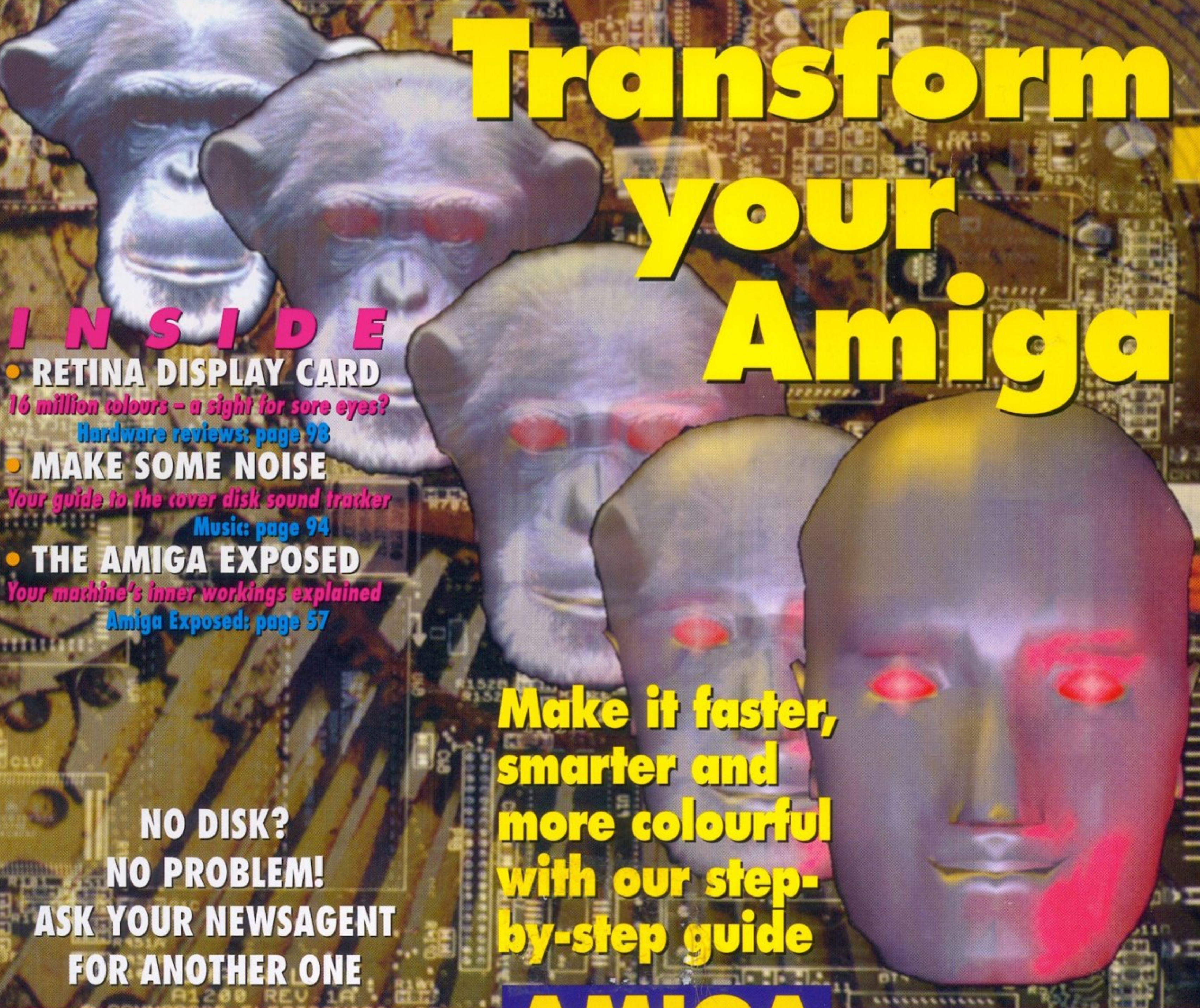
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AMIGA SHOPPER

From the makers of AMIGA FORMAT

ISSUE 27 ● JULY 1993 ● £2.50

YOUR DEFINITIVE AMIGA GUIDE



Transform your Amiga

INSIDE

- **RETINA DISPLAY CARD**
  16 million colours – a sight for sore eyes?
  Hardware reviews: page 98
- **MAKE SOME NOISE**
  Your guide to the cover disk sound tracker
  Music: page 94
- **THE AMIGA EXPOSED**
  Your machine's inner workings explained
  Amiga Exposed: page 57

Make it faster, smarter and more colourful with our step-by-step guide

NO DISK? NO PROBLEM! ASK YOUR NEWSAGENT FOR ANOTHER ONE

AMIGA ANSWERS

Every month, our experts bring their incomparable intellect to bear on your Amiga problems. The result? Amiga Answers!

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INDI DIRECT MAIL
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JAKKI BRAMBLES COLUMN

Hi,
It certainly doesn't seem a month ago that I last wrote for Indi and what a month it has been.

With immaculate timing Commodore announced their superb Amiga CD, are Sega and Nintendo worried?

Interesting question, 32 bit technology, 16.8 million colours and the amazing AA chip set: what do you think?

But, more to the point, what does it mean to you if you currently own or were thinking of buying an Amiga 600 or 1200. First of all let's be clear, you cannot use the Amiga CD as a computer until there is a keyboard and drive option (promised for 1994). So if you want to do any more than run CD software remember you will not have access to the vast range of floppy based software on Amiga nor the processing power that makes the Amiga so rewarding if you want to do more than games play.

So what does this mean to the current Amigas? To make it simple, the ***Amiga 600*** *is a cheap entry level system perfect for the first time user or those working to a budget. The* ***Amiga 1200*** *is the elite system for the dedicated user who wants to access the speed and performance of this mid range system; you can upgrade later via an external CD solution promised to be hot on the heels of the Amiga CD.*

The Amiga CD should be available to dedicated games players in August. Phone INDI to check for pricing and availability; and don't be confused, both the Amiga 600 and 1200 are around for some time. In fact Indi have already finalised their plans for Christmas!

Mail order purchasing *can be worrying, sending your hard earned cash to a company that may be hundreds of miles away, will your dream machine arrive as promised and what do you do if it doesn't?*

Indi is part of a very large company with their own in-house experts and systems and yet it still sometimes goes wrong. At Indi they have a Customer Care department who do nothing else but problem solve. So if Securicor couldn't find your house but will re-deliver tomorrow, or you cannot load a disk, they are there to help.

But what if the problem needs a fresh pair of eyes, perhaps you feel that you have been unsympathetically or unfairly treated?

I was delighted to learn that Indi take their responsibilities so seriously that they have joined the ***DMA.***

The Direct Marketing Association *is a very serious organisation (recognised by the Advertising Standards Association and other such official bodies).*
Getting accepted is difficult, staying in required Indi to set and achieve real customer satisfaction and solve problems quickly if they occur.

I sincerely hope that all Mail Order Companies will follow Indi and display the DMA symbol on their advertising. If they don't you should ask them why not.

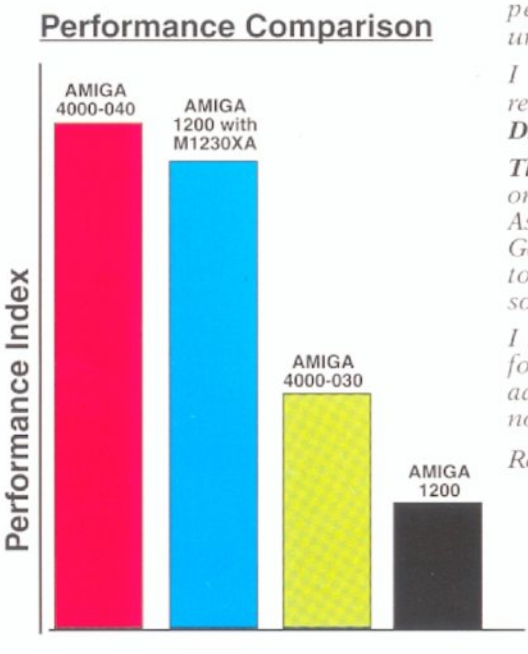
Regards,

Jakki Brambles

STOP PRESS

Latest news on the Amiga 4000-030 shows demand out-stripping supply world wide. If you are having problems getting stock or perhaps feel disappointed that you opted for the A1200 before you knew about the new machine all is not lost. Check out the table on the right showing the A1200 fitted with the new M1230XA Microbotics accelerator available from Indi from

ONLY £299.99



AMIGA SHOPPER AT A GLANCE GUIDE

To help you find what you want quickly and easily, here is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. You'll find a detailed index to the many subjects dealt with in the problem-solving *Amiga Answers* section given on page 39. The page numbers given are for the first page of the article in which the subject is mentioned.

Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:
***Amiga Shopper*,**
30 Monmouth Street,
Bath, Avon BA1 2BW.

WELCOME

Although the release of new machines by Commodore can only be viewed as a "good thing", the fact that the company fails to supply an adequate upgrade path for owners of older machines has created some dissatisfaction. That's where we step in. Our main feature this month describes how you can bestow A1200-like powers on your old A500 or A500 Plus. Some of the modifications are also applicable to the A1500 and A2000.

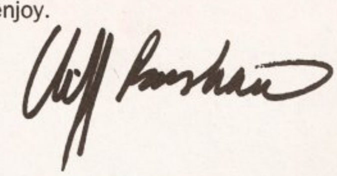
We tell you how to increase your Chip RAM for increased graphics and audio power, how to upgrade to the latest versions of Workbench and Kickstart for greater ease-of-use, and how to change over to the Super Denise chip, which offers extra screen modes. What we can't show you, unfortunately, is how to gain the new AGA screen modes of the A1200; instead we've discussed two low-cost display enhancers for the A500 that will provide similar facilities.

Probably the most important advantage the A1200 has over its predecessors is its faster processor. We've taken care of this, too. Starting on page 28 you'll find a comparison of all the latest processor accelerators from GVP and Progressive Peripherals. These are designed for a whole range of Amigas; some of them will give your A500 more power than Commodore's top-of-the-range A4000. All of them offer vast speed increases when it comes to maths, desktop publishing, graphics rendering and many other applications.



There's a great deal of exciting stuff in this month's issue, not least the second part of our Amiga Exposed feature and a close look at *Retina*, a low-cost display card with some unique features.

Read and enjoy.



PUBLIC DOMAIN WORLD

TERM OF ENDEARMENT

Did you know there are thousands of Amiga programs which are available for little more than the price of a disk, and many more that you can try out before you buy? In Public Domain World we take a look at the best of these programs and show you how easy it is to get hold of them.

This month we take a good look at perhaps the most fully-featured comms program available, *Term 3.1*, as well as a barrel-load of Fish programs, including a Pascal compiler.

It's a fishy business

as we call it this month, starts on page 103

AMIGA ANSWERS

Where can you find seven pages devoted to solving your Amiga problems?

Our panel, comprising experts from each of the major fields of Amiga computing, supplies the answer. Every month it solves more genuine reader problems than any other Amiga magazine. And in the Code Clinic we look at how faulty programs sent in by you can be made to work.

We answer questions every month on Workbench • The CLI • Comms • Programming • DTP • Video • Business software • And more!

THE ANSWERS START ON PAGE 39

FOR A FULL LIST OF CONTENTS, TURN THE PAGE

Your guarantee of value

This magazine comes from Future Publishing, a company founded just eight years ago but now selling more computer magazines than any other publisher in Britain. We offer:

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Better value for money. More pages, better quality: magazines you can trust.

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The home of Britain's finest computer magazines: Amiga Shopper • Amiga Format • Amiga Power • Commodore Format • PCW Plus • PC Plus ST Format • Your Sinclair • Sega Power Amstrad Action • PC Answers • PC Format Total! • Super Play • Mega • GamesMaster, MacFormat, Future Music, and some secret project they won't even tell *us* about yet...


WICKED TOYS FOR WICKED BOYS
COMPLETE AMIGA A1200 PACKAGE
AS SUPPLIED COMMODORE £369
AVAILABLE WITH THE FOLLOWING HARD DRIVES
60Mb £169
85Mb £199
120Mb £269
170Mb £299
250Mb £399
COMPLETE A4000/030 PACKAGE WITH 170Mb HD £899
We can also pick up your A1200 by courier, fit it, guarantee for 12 months and
return it by courier for the measley price of £29.
ALL HARD DRIVES ARE SUPPLIED PREPARED AND FORMATTED AND INCLUDE HD PREP V1.2,
SOFTWARE TO RE-PARTITION YOUR HARD DRIVE AND INSTALL WORKBENCH 3.0.
MBX1200 available with clock
85 Mb Drive
TRANSFER RATE MORE THAN
900K/SECOND
240 Mb Drive
TRANSFER RATE MORE THAN
1.8M/SECOND
85 Mb
240Mb
THE FASTEST AMIGA HARD DRIVES AVAILABLE
For a wide range of hardware and software please visit our shop at 38/40 Queens Chambers,
Queens Street, Penzance, Cornwall or just visit our game zone and
have a go at all the latest games.
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ORDER HOTLINE (0736) 331039
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PLEASE MAKE ALL CHEQUES PAYABLE TO SOFTWARE DEMON LTD
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INSIDE THIS ISSUE

AMIGA SHOPPER
Issue 27 – July 1993

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Once again it's your chance to win yourself 12 free issues of Britain's best-selling serious Amiga magazine. Tell us the name of the first aircraft to break the sound barrier, put your answer on a postcard and send it to: "A screaming comes across the sky", *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. First correct answer out of the bag wins. No one as yet has sent in the correct answer to last month's poser, so get your thinking caps on – we thought it was an easy one!

INDI DIRECT MAIL

CUSTOMER CHARTER

INDI Direct Mail is original and very exciting. Before you buy mail order you must first be confident that you will receive the product you've ordered and that the supplier will still be there in the future, should you need them.

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INDI is a wholly owned subsidiary of a public company now in its tenth year of trading and specialising in the supply of computer products.

With a turnover approaching £30 million per annum, we have the resources and the purchasing power to offer you the best deals, deliver them next day nationwide and always be around when you need us.

SALES AND SUPPORT

The INDI sales team have been trained to take your order with the utmost care and efficiency. All stock offered for sale is held in stock, centrally at our group warehouse complex and is available for next day delivery, direct to your home or business. If at any time we are out of stock your money will not be banked until the product is available (a point worth checking should you feel tempted to purchase elsewhere).

General information regarding product is available from our sales team, however technical support is always at hand should you need assistance.

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500	£54.99	£659.88	£31.06	£745.44	£23.27	£837.72
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*PAY 10% NOW AND NOTHING MORE FOR 3 MONTHS.

AMIGA A1200



COMIC RELIEF PACK.
The event may be over but the fund raising still goes on.If your looking for the late Amiga technology then this is the starter pack for you. Based around the outstar A1200, this pack also gives you sleepwalker, a most addictive platform game from o software. You'll be pleased to know that every one of these packs purchased ra another £10 for Comic Relief.

A1200 STANDARD FEATURES.
- 68020 Processor.
- PCMCIA slot.
- 2MB ChipRAM.
- 3.5" Intern Drive.
- AA Chipset
- Built in TV modulator.
- Alpha numeric keypad
- 12 Months at home maintenance

INDI PRICE
£379.99 or from **£14.47*** per mont

*(Credit price based on 36 monthly payments APR 29.8%. Total repayment £520.92 and 90 day deferred payments.)

OFFICIAL A1200 HD SYSTEMS
The Amiga 1200 supplied by INDI Direct Mail now includes the official (legal) Commodore installation disk and hard drive utility manual. Indi are proud to be an official supplier of Amiga 1200 Hard Drive systems, that include the official software, documentation and on - site warranty

A1200 60 MEG HD INDI PRICE £539.99
A1200 80 MEG HD INDI PRICE £599.99
A1200120 MEG HD INDI PRICE £679.99

INDI A1200 ACCESSORY PACK
Pack Contains:
- 3 Superb Games
- International Games Challenge
- The Cool Cro
- Paradroid 90
- Zapsac and Zappo T- shirt

INDI PRICE £19.99

60/80 Hard Disk upgrades available on any A1200. Upgrade includes full Wang warranty on A1200 and Hard disks. Phone for a qu

AMIGA A4000



It's here - The new Amiga 4000/030

The NEW Amiga 4000/030 features a EC68030 processor running at an incredible 25Mhz, and upgradable at a later date to a faster processor. The 4000/030 has a powerful 4Mb of 32 - bit RAM (2Mb chip & 2Mb fast) expandable to 18 Mb using industry standard 32 - bit Simms module. In line with the Amiga flagship 4000/040 the 4000/030 features the new AGA graphics chipset, giving you a massive pallet of 16.8 million colours. A range of hard drive options are available form 80 - 240Mb and includes a SCSI option.

4000/030 80 Mb HD INDI PRICE £939.99
Other Drive Options
4000/030 120 Mb HD INDI PRICE £1039.99
4000/030 240 Mb HD (exclusive to INDI)
Phone for price
4000/030 120 Mb SCSI HD (exclusive to INDI)
Phone for price

A full range of approved upgrades are available for the 4000 030, including additional memory modules, hard drives, PC bridge boards, FPU's (68881 & 68882) and the 24 - bit Opal vision graphics and video system.

NEW MONITOR RANGE

THE NEW DUAL SYNC 1940/ 1942 Monitors have been specially designed for the New Amiga 1200 and 4000 computers. Both monitors feature built - in stereo speakers.

INDI PRICE
1940 Monitor £279.99
14 inch screen size - 0.39 mm dot matrix.

INDI PRICE
1942 Monitor £379.99
14 inch screen size - 0.28 mm dot matrix.



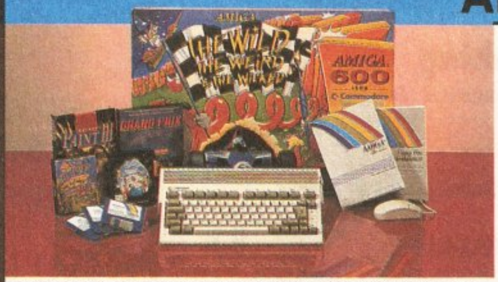
Parnet Adaptor for CDTV

Connect a CDTV Player to any Amiga, and acce world of CD - ROM software.
The Parnet interface and software will allow the CDTV to be used as a CD - ROM drive with any and will give any Amiga owner access to the range of CDTV software currently available.
The CDTV player offers excellent value for m when compared with a standard CD - ROM driv interface. Most CD - ROM drives will set you bac £400 while CDTV will cost you less than £300 ar play audio CD's in addition to CD - ROM / CDTV The Parnet adaptor includes the software driv your Amiga, interface cable and PD disk with software for your CDTV player

INDI PRICE **£39.**

A4000/030 PLUS CDTV + 1960 MONITOR.
INDI PRICE £1599.99
CDTV + PARNET.
INDI PRICE £329.99

AMIGA A600 PRICE CRASH



THE WILD, THE WEIRD AND THE WICKED A600 is an ideal starter pack containing a considered mix of software, making the most of the Amigas amazing capabilities.

PACK CONTAINS:
- A600 Single Drive
- Built in TV Modulator
- 1 Mb Memory
- Pushover: Grandprix
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NEW LOW LOW PRICES
~~£289.99~~
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A600-SD A single drive Amiga for those of you requiring a basic A600 at a ver competitive price.
PACK INCLUDES: A600 single drive, built in TV modulator, 1Mb memory. 12 Months at home service.

INDI VALUE ADDED FREE
- Kick Off 2
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- Populous
- Microswitched joystick

INDI PRICE ~~£239.99~~ **£189.**

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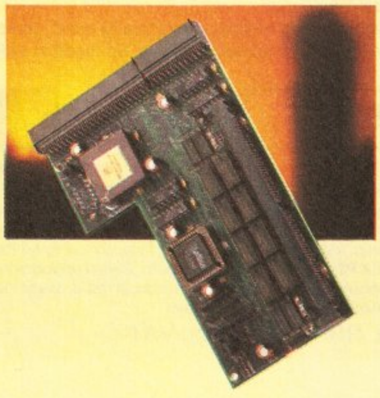
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New from Microbotics for the A1200!!!. M1230XA Accelerator launch!!

crobotics beats the competition on price, performance, atures and configurations.INDI is very pleased to announce the ailability of the new 68030 accelerator product for the A1200: the crobotics M1230 XA (call it the "XA" for short) 50 MHZ speed is andard! Memory management is standard! Huge 128 MB emory design is standard (the biggest memory space on any 200 peripheral) Just look at these specifications and prices!

1230 XA W/40 MHZ EC 030 0MB	INDI PRICE £299.99
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1230 XA W/50 MHZ MMU 030 4MB	INDI PRICE £499.99



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The ultimate accessory for Amiga / video fans. Separate RGB controls to croma key on any colour
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A total hand held scanning package for all Amigas complete with interface and software (mono)
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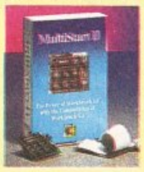
AMIGA PERIPHERALS.



2MB SMARTCARD. The original and still the only fully PCMCIA compatible memory card for A600/A1200. Comes with lifetime guarantee. Beware of cheap imitations
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4MB SMARTCARD. Same as above but maximum 4 MB **INDI PRICE £199.99**



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ZAPPO 601NC. As above only 512K no clock **INDI PRICE £29.99**



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with kickstart V3 **INDI PRICE £44.99**
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"Quality: 9 out of 10." Exceptional value for money.
AMIGA COMPUTING JAN 93

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(£179.99 If purchased with A600/A1200/A1500)



COMMODORE MPS 1270A INK JET PRINTER.
Whisper quiet yet prints at an amazing 160 CPS.
Possibly the best value printer on the market.
INDI PRICE **£94.99**
1270A - REPLACEMENT INK JET CARTRIDGE.
INDI PRICE £12.99

PRINTERS

COMMODORE MPS 1230 A high quality 9-pin Dot Matrix Printer with paper and tractor feed and is fully compatible with Epsom FX80 and IBM Industry standards. High speed 120 CPS draft mode and an NLQ mode of 25 CPS.
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AMIGA LOGO- Educational and programming language.
AMIGA VISION- Multimedia Authoring system for video, animation, sound, speech, graphics and text.
INDI PRICE **£134.99**

THE NEW CD AMIGA

Just prior to finalising this advertisement Commodore have confirmed that the new CD Amiga has been **delayed until August.**

If there is any change then the INDI Sales Desk will be able to take your order.

However, Commodore are confident that circumstances will not change.

TERMS AVAILABLE OVER 6, 12, 18, 24 & 36 MONTHS SUBJECT TO STATUS. WHY NOT RING FOR A QUOTE. SAMEDAY RESPONSE. (SEE EXAMPLE)

Panasonic Quiet Colour Printing

We researched the colour printer market at great depth to find a colour printer good enough to cope with Amiga's powerful graphic output, yet at an affordable price.
We found the perfect printer in the KX-P2180 + KX-P2123 quiet printers.
We then considered that if you were going to buy a Panasonic printer you would probably need a quality word processing package to use with it. We found that too, with ' Wordworth', yet at a retail price of £129.99 we thought that might be a little too expensive on top of your printer purchase! So together with Panasonic we decided to give a copy of 'Wordworth' free with every Panasonic printer. How's that for added value?

Panasonic KX-P2180



***WORDWORTH COMPLETELY FREE! WITH PANASONIC QUIET PRINTERS** The writers choice. The ultimate word processor for AMIGA computers. Wordworth is undoubtedly the ultimate word/ document processor for the full range of AMIGA computers. The graphical nature of WORDWORTH makes producing documents faster and easier, with the enhanced printing fonts (including full Panasonic KX P2180 + KX P2123 colour printing support), Collins spell checker and thesaurus, no other word processor comes close. "Without doubt this is one of the best document processors for the AMIGA, Today"(Amiga Format)
NORMAL RRP £129.99 inc VAT

INDI PRICE £189.99

The new Panasonic KX - P2180 9 pin quiet colour printer. Produces crisp clear text in mono or in 7 glorious colours with new quiet technology. The new KX - P2180 is typically 15dBA quiet er in operation, than the competition.

- **Fast Printing Speeds** 192CPS Draft and 38 CPS NLQ
- **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta and black)
- **Quiet Printing** Super quiet 45 - 48dBA sound level (most matrix printers are typically in excess of 60dBA)
- **6 Resident Fonts** Over 6,100 type styles using Courier Prestige, Bold PS, Roman, Script and Sans Serif Fonts
- **3 Paper Paths** Paper handling from bottom, top and rear for total flexibility
- **1 Year warranty** for total peace of mind.

Panasonic KX- P2123



INDI PRICE £239.99

The new high performance Panasonic KX - 2123 24 pin. Quiet colour printer offers leading edge quiet printing technology at an affordable price.

- **Fast Printing Speeds** 192 CPS draft, 64 CPS LQ and 32 SLQ.
- **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta and black)
- **Quiet Printing** Super quiet 43.5 - 46kBA sound level (most matrix printers are in excess of 60dBA)
- **7 Resident Fonts** Over 152,000 type styles using Super LQ, Courier Prestige, Bold PS, Roman, Script, and Sans Serif Fonts
- **24 PIN Diamond Printhead** High performance and high quality output
- **1 Year Warranty** for total peace of mind.

Panasonic LASER PRINTER

KXP - 4410 LASER PRINTER





WORDWORTH COMPLETELY FREE! WITH PANASONIC LASER PRINTERS The writers' choice. The ultimate word processor for AMIGA computers. NORMAL RRP £129.99 inc. VAT

KXP - 4430 LASER PRINTER



Once again INDI have joined together with Panasonic to offer all Amiga owners the most outstanding Laser Printer offer ever. We are now able to offer high quality, professional laser printing at affordable prices. We are also giving away a free copy of Wordworth with every Panasonic Laser Printer purchased (RRP £129.99). Whether you are looking for a laser printer to handle word processing, DTP, presentation or complex graphic applications - the Panasonic range offers you the power to meet your requirements.

KXP - 4410

- 5 pages per minute
- 28 resident fonts
- Optional 2nd input bin (total printer capacity 2 x 200 sheets)
- Low running costs
- Parallel interface
- Optional memory expansion to 4.5 Mb (0.5 Mb as standard)
- HP laserjet II Emulation

INDI PRICE £499.99 inc. VAT

WORDWORTH COMPLETELY FREE WITH LASER PRINTERS

Panasonic 2 YEAR ON-SITE WARRANTY

KXP - 4430

- Satinprint (optimum resolution technology)*
- 5 pages per minute
- HP Laserjet III Emulation, PCL 5
- 8 Scalable fonts & 28 bitmap functions
- Optional 2nd input bin (total printer capacity 2 x 200 sheets)
- Optional memory expansion to 5.0 Mb (1 Mb as standard)

INDI PRICE £699.99 inc. VAT

*(Satinprinters use optimum resolution technology to produce truly outstanding print quality.This software technique smooths away traditional jagged edges on curved characters and lines by varying the printed dot size and position).

WORDWORTH COMPLETELY FREE WITH LASER PRINTERS

Panasonic PRINTER ACCESSORIES



1) PANASONIC AUTOMATIC SHEET FEEDER
Automatic Sheet Feeder for KXP 2180/ KXP 2123 holds 80 A4 sheets. **INDI PRICE £89.99**

2) PRINTER DUST COVER
Specially tailored quality dust cover for Panasonic KXP 2180/ KXP2123 printer. **INDI PRICE £8.99**

3) PRINTER STAND
2 piece printer stand. **INDI PRICE £9.99**

4) PAPER PACK
500 sheets quality A4 paper. **INDI PRICE £9.99**

5) CONTINUOUS PAPER
2000 sheets 1 part listing paper. **INDI PRICE £19.99**

6) PARALLEL PRINTER CABLE
To be used when connecting Amiga to Panasonic Printers. **INDI PRICE £8.99** (£5.99 if purchased with a printer)

7) PANASONIC COLOUR RIBBON
Colour ribbon for KXP 2180/ KXP 2123. **INDI PRICE £18.99**

8) PANASONIC BLACK RIBBON
Black ribbon for KXP 2180/ KXP 2123. **INDI PRICE £9.99**

SAVE £££££'s ON THE FOLLOWING ACCESSORY PACKS

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Contains 6 colour ribbons for the KXP 2180/ KXP2123 RRP £119.99. **INDI PRICE £89.99** SAVE £30.00!!!

PACK 2
PANASONIC RIBBON PACK
Contains 2 black and 4 colour ribbons for KXP 2180/ KXP 2123. RRP £99.99. **INDI PRICE £69.99** SAVE £30.00!!!

PACK 3
PANASONIC DELUXE ACCESSORY PACK
Contains Automatic Sheet Feeder, 2 black ribbons, 2 colour ribbons, 1 dust cover, 2 piece printer stand. RRP £169.99 **INDI PRICE £139.99** SAVE £30.00!!!

Add £2.50 carriage to all printer accessories or combinations thereof

12 MONTHS INTEREST FREE CREDIT AVAILABLE ON CDTV EXTERNAL HARD DISK SUBJECT TO STATUS. LOW INTEREST CREDIT AVAILABLE ON ALL ORDERS OVER £200

AMIGA CDTV THE MULTIMEDIA COMPUTER TOTAL HOME ENTERTAINMENT SYSTEM



MONITOR NOT INCLUDED

The problem with any new product is that it always takes time for everyone to realise its full potential. CDTV is no exception and in our opinion everything we have read does a pretty poor job of explaining just what CDTV can do and why it is so exciting,

THE INDI GUIDE TO CDTV

IT'S A CD PLAYER - Yes, it will play all your Primal Scream, Pavarotti, Pink Floyd and any other CD you care to mention in superb high quality stereo, with infra red remote control.

IT'S AN AMIGA - Plug in the keyboard, switch on the external disk drive and the colossal range of inexpensive Amiga software can be used on CDTV.

S A MULTIMEDIA SYSTEM - Just imagine, stereo sound, images and text all on screen . It asks a question, you respond, it sponds - truly interactive! Each CD disc holds hundreds of megabytes of data with instant optical access. The whole of tchinson's Encyclopeadia fits onto one disc. This interactive system is a unique aid for Education, Business or Leisure.The ure is here!

ACK CONTENTS AS STANDARD • Amiga CDTV Player • CDTV keyboard • CDTV 1411 3.5" Disc Drive • CDTV Infra red remote controller • CDTV wired mouse • CDTV elcome Disc • Manuals • Fred Fish CDTV Disc

DI VALUE ADDED FREE • Lemmings CDTV (£34.99) Blues Brothers (£12.99) • Pipemania, Populous, ckoff 2, Space Ace

PRICE CRASH ~~£399.99~~

INDI PRICE

PACK AS SHOWN £329.99

MULTI MEDIA PACK WITHOUT INDI VALUE ADDED £299.99

CDTV CONNECTS DIRECTLY TO YOUR TV SET

AMIGA CDTV ACCESSORIES



THE BRICK - ETTE Just plug in the Brick - ette and use any wired Amiga compatible joystick, mouse or trackball device on the Commodore CDTV. The built - in 8 - bit Micro Processor gives the Brick - ette big smarts in a tiny package and makes it easy to use just plug into the remote port and it is ready to go with real time mouse or joystick movement your CDTV. No loading of driver programs or softare. No switches for mouse or joystick. Special setgs (with mouse) allow you to blast away with three oid fire modes & dual fire buttons. Comes complete th Python Micro Switched Joystick.
DI EXCLUSIVE £49.99
th two joysticks **£59.99**



BLACK 1084S MONITOR
At last the CDTVMonitor you have been waiting for. The original and best sellingcolour/stereo monitor from Commodore is now available in black to complement your CDTV.
INDI PRICE £189.99
(or £179.99 when purchased with CDTV Multi-Media pack).



If you are thinking of buying CDTV or already own one you'll be pleased to know that INDI stock all CDTV accessories and software that are available from manufacturers. We believe in CDTV and we therefore continue to support this exciting product. You will always have a source of product for your CDTV from INDI.

L to R:

CDTV Encore SCSI Controller + Internal Mount	£109.99
CDTV Internal Genlock	£149.99
Black 1084S Colour Stereo Monitor	£189.99
(When purchased with CDTV Multi- Media Pack)	£179.99
CDTV Remote Mouse	£49.99
Scart TV/Monitor Lead (inc Stereo Phono Lead)	£14.99
Megachip - 1Mb Upgrade Chip RAM Upgrade for CDTV	£159.99
CDTV Trackball	£69.99

AMIGA CDTV EXTERNAL HARD DISK DRIVE

You've got the CDTV, you've got the keyboard and the floppy disk drive - for a total computer solutuon all that's needed is an ultra fast hard disk drive.
The CDTV-HD unit boasts a massive 65Mb of hard disk storage with lightning fast access times through its SCSI interface.The unit comes complete with Workbench 1.3 and all necessary cables.



INDI PRICE £269.99

12 MONTHS INTEREST FREE CREDIT ON THIS PRODUCT. PHONE FOR DETAILS. (SUBJECT TO STATUS)

AMIGA CDTV SOFTWARE

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Ultimate Basketball	£29.99
Classic Board Games	£34.99
Dinosaurs for Hire	£14.99
Hound of the Baskervilles	£29.99
Psycho Killer	£29.99
Sherlock Holmes, Consulting Detective	£39.99
Sim City	£29.99
Trivial Pursuit (PAL)	£49.99
Wrath of the Demon	£29.99
Team Yankee	£34.99
Raffles	£34.99
Prehistorik	£34.99
Snoopy (PAL)	£34.99
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Global Chaos	£29.99
Turrican I	£29.99
Turrican II	£29.99
Guy Spy	£29.99
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Curse of Ra	£24.99
Space Wars	£29.99
MUSIC	
Music Maker	£34.99
Remix	£29.99
Karaoke Fun Hits 1	£14.99
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indi DIRECT MAIL

DESPATCH

All orders received by 6pm Monday to Friday are despatched that day for next working day delivery using our national courier - Securicor .(UK Mainland only). Saturday deliveries are available at a small surcharge. If you are out when we deliver, a card will be left at your home giving you a contact telephone number to arrange a convenient re-delivery
Delivery queries can be resolved immediately using our on - line computer.
All orders are despatched on a next working day delivery basis. Cheque orders are despatched immediately on cheque clearance, usually 10 working days from receipt. A delivery charge of £5.00 is made per item unless otherwise stated.
WE ALSO ACCEPT B.F.P.O. ORDERS (DUTY FREE) CARRIAGE CHARGE AT UK POSTAL RATES.

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All products are guaranteed for 12 months. Some products carry a 12 months at home service/repair guarantee (where indicated). In the unlikely event that any product purchased from INDI arrives at your home faulty, we will collect from your home and replace the product completely free of charge.

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NEWS IN BRIEF

IMAGINATIVE BOOKS

The book *Understanding Imagine 2.0* is now available from Alternative Image.

The book, written by Stephen Worley and published by Aphex Publishing, contains a wealth of hints and tips for owners of the popular *Imagine 2* 3D rendering package. It is available for £25, including postage and packaging, from Alternative Image ☎ 0533 440041

OPUS UPGRADE DEAL

Owners of INOVAtronics's *Directory Opus*, a program that vastly improves the user-friendliness of the Amiga's operating system, can obtain an upgrade to version 4 for £47.

The deal is being offered by Meridian Software Distribution. To take advantage of it, users should send the company the money along with their old *Directory Opus* disks. New features of *Opus 4* include support for the AGA chipset and improved resource efficiency. This is achieved by loading functions – such as diskcopy, format and printtext – only when they are required. For more information contact Meridian Software Distribution on ☎ 081 543 3500. INOVAtronics is on ☎ 0101 214 340 4991.

STUDIO ADVANCED

***Studio Printer Software*, a package that enhances the output of printers, has been updated to offer support for Hewlett-Packard's newly announced printers, the DeskJet 1200C, DeskJet 510, LaserJet 4L and LaserJet 4SI. The software supports the built-in features of these printeres. It offers 24/32-bit colour adjustment, custom dither routines, ink compensation and PJL support.**

A free update goes out to existing owners. *Studio Printer Software* 1.1 costs £49.95 from JAM ☎ 0895 274449.

A600 PRICE DROP

INDI Direct Mail are now selling A600s at the price of £189.99 each. Craig Saddington, INDI's general manager, says: "We had expected to get down to this price by Christmas, but this is a real bonus. There is now a real price difference between the A600 and A1200 – it must be the best value for money computer on the market."

INDI ☎ 0543 419999.

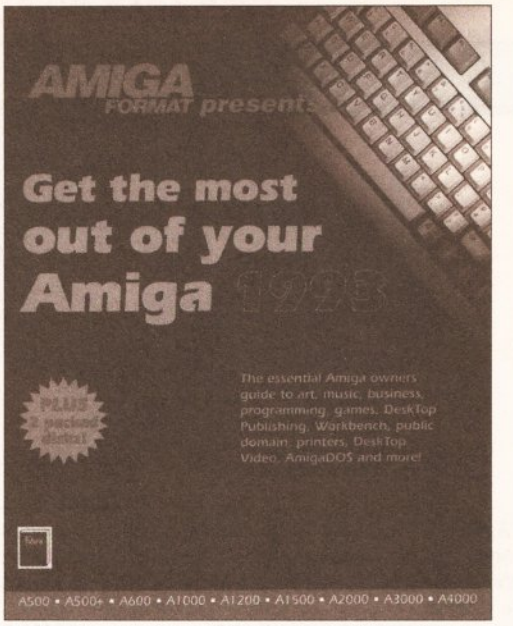
Future Books Bonanza

Future Publishing (makers of *Amiga Shopper*) have set up a new books publishing arm, and the first two titles off the presses are for Amiga owners everywhere.

Get the Most out of your Amiga 1993 is the third edition of the best-seller first published in 1991. The 1993 version has been completely rewritten to reflect the ever-changing Amiga market. It features the work of ten Amiga specialists (including many names familiar to readers of this mag), and runs to well over 300 pages. The cover price of £19.95 includes two disks containing top PD applications and utilities.

Specific sections of the book deal with graphics, music, desktop publishing, programming etc, with buying advice in each one. New for 1993 is an extensive AmigaDOS 2 & 3 reference section. Books Editor Rod Lawton explains: "We want to produce the definitive Amiga guide. If that means bumping up the size, year after year... well, so be it."

The second book is the *Amiga Format Pocket Workbench & AmigaDOS Reference.* The idea was to take the AmigaDOS reference section from the *Get the Most...* book and publish it separately as an instantly-accessible ring-bound desktop reference. Additional material includes sections on Workbench commands, everyday Workbench housekeeping, preferences, tools, commodities and utilities. Lawton says "the only thing we didn't include was ARexx – that deserves a book of its own. Watch this space!" The 170-page Pocket Reference will sell for £9.95.



Best-selling book* Get the Most out of your Amiga *has been updated to reflect the booming market.

Other titles in the offing are *The Amiga Shopper Guide to AMOS Programming* and guides to desktop publishing and desktop video. Look for these and others in the autumn.

BLUE RIBBON IMPROVE THEIR CUSTOMER SERVICE

The Blue Ribbon SoundWorks, makers of *Bars & Pipes*, have appointed two authorised UK distributors to improve their relationship with UK customers.

The company president Melissa Jordan Grey said: "We're disappointed to learn that certain distributors in the British marketplace are disseminating inaccurate and misleading information about our products. In addition, customers have been unable to get the support they truly deserve.

"We were amazed to discover that certain UK distributors are providing their customers with pirated, unauthorised copies of our most popular products. It is with this in mind that we ask all users and potential purchasers of Blue Ribbon products to look out for the following: handwritten disks, previously registered products and anything that fails to meet Blue Ribbon's standards of excellence." The company advise customers with orders from unauthorised distributors to contact their UK Customer Support line ☎ 081 332 6959.

The two distributors that Blue Ribbon has chosen to authorise are Meridian Software Distribution ☎ 081 543 3500 and Micro-PACE UK ☎ 0753 551888.

Blue Ribbon have just released version two of their sequencer package, *Bars & Pipes Professional.* Its enhancements include the ability to control non-musical events from within the program. This function is performed by the *Media Madness Player*, which can synchronise to SMPTE, ARexx and the special accessories that synchronise *Bars & Pipes Professional* to other products. With the package it is now possible to design multimedia presentations that are run directly from *Bars & Pipes Professional.* The package costs £299.99. The Blue Ribbon SoundWorks ☎ 0101 404 315 0212.

Official hard drive upgrades

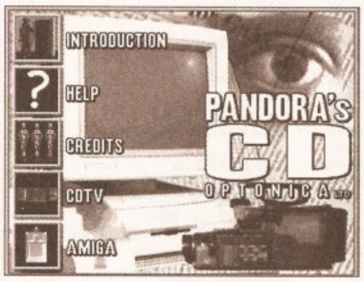
Contrary to what you may have heard, there is more than one company officially able to supply hard drives to A1200 owners.

Silica Systems' Andy Leaning explained that two distributors to the trade, Silica and ZCL, have been officially appointed by Commodore to fit hard drives. They then sell these machines on to high street dealers, who can then sell the machines with their warranties intact to end users.

Said Andy Leaning: "Most dealers in the UK have the ability to supply A1200s with a hard drive fitted and maintain the Commodore warranty.

"One method of identifying an officially upgraded A1200 is to look for a bright sticker on the outside of the box. If you see it has this sticker it is an officially upgraded system. If it doesn't... it may not be a legal unit, and it may not have a Commodore on-site warranty."

Silica Systems (☎ 081 309 1111) also supply official hard drive systems directly to the public.



Pandora's CD – *full of sounds, pictures and multimedia demos.*

Multitude of multimedia

Optonica have released a CD for the seriously low price of £4.99.

Called *Pandora's CD*, the disc is a promotional device containing a wealth of multimedia material. It includes 2,000 items of colour clip art, a photograph library, a textures and backgrounds library, a sound effects library and a juke box program. In addition, sample versions of several multimedia applications are present: *INSIGHT: Technology*; *Milton Keynes Point Of Information* demo; *Nuclear Power Training* demo; *The Five Senses* educational demo; *Learn To Count* demo; *Mega Mart Point Of Sale* demo; and *Mediator*, Optonica's file management software. *Pandora's CD* costs £4.99 from Optonica ☎ 0455 558282.

Living it up in London

AMIGA FORMAT Live '93
WEMBLEY EXHIBITION CENTRE
7 – 9 MAY 1993

The Amiga Format Live Show, which took place at the Wembley Exhibition Centre early last month, was a great success for organisers, exhibitors and visitors alike. Cliff Ramshaw brings you the highlights.

The Amiga is alive and kicking. This year's *Amiga Format Live Show* certainly demonstrated that. Like the *Future Entertainment Show* before it, it gave you the chance to meet the teams who make your favourite magazines and have some input as to their future direction.

One of the show's main attractions, quite apart from the opportunity to play games for prizes or see new products and buy others at discounted prices, was the series of seminars run by *Amiga Format* and ourselves. People flocked to the Sound & Vision stand to watch as state-of-the-art hardware and software were put through their paces by experts (including our very own Gary Whiteley) in the fields of video, graphics and music. Another hit was the Amiga Answers seminar, which attracted a whole host of people eager for knowledge. Our thanks to Jeff Walker, Jolyon Ralph and Gus Chandler, who made up the redoubtable Answers panel.

The show played host to over 60 different exhibitors – far too many to mention individually. What follows is a selection from those displaying the most exciting products.

Power Computing had a number of new things on their stand. First and foremost was the ICD accelerator for the A1200. Called the *Viper 1230*, it comes with a 68030 (either EC clocked at 40MHz or full version clocked at 50MHz), space for memory expansion and a maths co-processor, and a Direct Memory Access port for the addition of further peripherals such as SCSI adaptors. UK prices have yet to be finalised.



People crowded to hear what dodgy-looking individuals such as these had to say about the state of the Amiga.

Power's other main product was the XL floppy drive, a high-density drive that will fit up to 1.76Mb of information on a single disk, although it retains compatiblity with standard 880K Amiga disks. The XL 1.76Mb drive costs £129.95 from Power Computing ☎ 0234 843388.

More than a few people gathered around Digita International's stand, where the company were giving seminars about their *Wordworth* word processor. At the show Digita launched a number of related products: the second issue of their free *Wordworth* newsletter, which goes out to all registered users, and five more volumes of clip art – *Cartoons, More Cartoons, Sports, Science And Nature*, and *Geography And Transport*, each costing £14.99. Digita showed for the first time their three packs of Agfa CompuGraphic Fonts: *Pride And Presentation* contains 20 fonts and costs £29.99, *The Classic Collection* contains 25 fonts for £39.99 and *The Reference Library* contains 50 fonts for £69.99. The company also launched a new version of *Wordworth*, to be bundled free with Panasonic printers, which provides extended support for their internal printer fonts. Digita International ☎ 0395 270273.

These printers were on sale at the INDI Direct Mail stand, along with the M1230XA accelerator from Microbotics. Clocked at either 40 or 50MHz, the M1230XA contains a 68030 processor and space for up to 128Mb of 32-bit wide RAM. Prices start at £299.99 and £379.99 for the 40MHz and 50MHz versions respectively. INDI Direct Mail ☎ 0543 414817.

American-based company INOVAtronics, who have just opened an office in the UK, were there to show off the latest versions of *CanDo* and *Directory OPUS*. *CanDo's* latest enhancements include Script Bookmarking, Bug Basher, support for the 68040, improved on-line help and more efficient memory management. It costs £149.95. *Directory OPUS 4* is now AGA-compatible, has increased support for graphic and sound files and offers a Font View facility which prints out an entire alphabet in any selected font. The program is extensively configurable by the user. It costs £69.95 from INOVAtronics ☎ 0707 662861.

So – a smashing show. We'll see you at the next *Future Entertainment Show* in November! AS

VIEWS ON THE VITALITY OF VIDEO

There was much on display to delight both the video enthusiast and professional, testifying to the Amiga's continued success in this field.

The show played host to three new entrants to the high quality display device market. Two of these were on the Amiga Centre Scotland stand: *Retina* and *Harlequin Plus*. *Retina* is a low-cost board, and full details appear on page 98, where it is reviewed..

The *Harlequin Plus*, designed by Xi Electronics, has a Zorro II connector and offers a maximum of 16.7 million colours.

Among the board's many enhancements is an improvement in its display quality, making it ideally suited to broadcast work. An internal genlock means the display can be synchronised with external video signals. New 15-bit and 8-bit colour modes are provided, along with palette mapping. A 4-bit overlay image can also be added. Two new horizontal screen resolutions are provided: 720 and 768 pixels. It is available with 2Mb (for £1,499) and 4Mb (for £1,599) of RAM, for single and double-buffered frames respectively. Amiga Centre Scotland ☎ 089 687 583.

HiQ had on show the new YC version of *AVideo*, a display card that can act as a 12-bit or 24-bit display with double-buffering. All Amiga resolutions, up to 724x566 pixels, are supported. The board has genlocking facilities and an in-built 24-bit digitiser. *AVideo* costs £599 from HiQ ☎ 081 909 2092.

Rombo's was the stand to visit for digitising. As well as their *VIDI Amiga 12* package, boasting updated software, they were demonstrating *VIDI Amiga 12 (RT)*, which can digitise 12-bit images in real time, and their latest baby, the *VIDI Amiga 24 (RT)*, which can grab frames from moving video in full 24-bit, 16.7 million colour glory. Like the other VDIs, it supports AGA screen modes, provides controls for animation and has a number of image processing effects at its disposal. It supports a number of image file formats, including ones for PCs and Macs. *VIDI Amiga 12* (£79), *VIDI Amiga 12 (RT)* (£199) and *VIDI Amiga 24 (RT)* (£299) are available from Rombo ☎ 0506 414631.

V3I were demonstrating *VideoPilot V330*. It enables the Amiga to fully control, by means of scripts, the mixing of video signals from three video sources on to a further video deck. Audio dubs and previews are possible, as are special effects such as stills, slow motion and accelerate. An Amiga titler is included as part of the package. The cost of the basic unit is £1,299; upgrades cost £799. Call V3I ☎ 010 33 8876942.

NEWS IN BRIEF

STICK OF FREEDOM

The latest solution to the problem of sitting too close to your screen comes from Blue Alpha Electronics.

The company has designed a device that enables joystick wielders to sit up to five metres away from their computers. The Blue Alpha Remote consists of a transmitter and a receiver. The receiver attaches to the computer's joystick port, from which it takes its power. Any nine-pin joystick can then be plugged into the transmitter.

The Blue Alpha Remote costs £34.99 (plus £2 postage and packing) from Blue Alpha Remote ☎ 0269 826260. It is also being distributed by Fred Publishing ☎ 0382 535 963.

LEARN WITH VIDEO

The Burgess Video Group is selling a range of instructional video tapes entitled the *Amiga Video Collection*.

The tapes deal with specific Amiga software packages and techniques, aiming to help the user get more out of his or her set-up. Prices for the tapes range between £8.99 and £14.99. Currently there are 18 titles, including *Amiga Primer, Animation Vol. I, Amiga Graphics Vol. I, How To Animate, Animation 101, The Deluxe Paint IV Video Guide, The Magic Of Music And MIDI, Audio Production For The Amiga, Desktop Video Vol. I, Hot Rod Your Amiga* and *The Amiga Service And Repair Video*.

The Burgess Video Group ☎ 0874 611633.

A1200 SPEED BOOST

Microbotics' accelerator for the A1200 is to be marketed by INDI Direct Mail.

The M1230XA consists of a 68030 processor along with space for the addition of memory and a 68881 or 68882 maths co-processor. Up to 128Mb of 32-bit wide memory can be added to the board using SIMMs.

The board is available in two basic configurations: one clocked at 40MHz and starting at £299, and the other starting at £50MHz for £399. These prices are for boards without memory; each additional 4Mb will cost you £100.

For more information contact INDI Direct Mail ☎ 0543 419999.

MORE CONTROL FOR SIMPATICA USERS

Optonica have announced the latest version of their single frame video rendering system, *Simpatica*.

Simpatica, originally reviewed in issue 1 of *Amiga Shopper*, enables the video professional to achieve complete control over video hardware by means of the Amiga. By directly controlling the video recorder it automates the process of recording frames of animation to tape as they are rendered on the Amiga.

Version 2 of *Simpatica* now supports AGA graphic modes, both 256 and HAM-8 colours. This means that it can now handle all Amiga graphics modes, as well as full 24-bit.

Simpatica 2 also introduces a 24-bit rotoscoping feature, whereby sequences of video frames can be accurately digitised, modified by third party packages and subsequently re-rendered to tape. The company claims that effects such as those used in *Terminator 2* and *Roger Rabbit* are now possible. *Simpatica 2* costs £350; upgrades are available for £49.95.

Optonica have also released a brand new product that can be used in conjunction with *Simpatica*'s hardware. *VDL*, or *Video Timelapse*, enables the user to create timelapse and stop motion sequences at the press of a button.



With Simpatica you can fully automate the rendering of animations to your videotape deck.

Features include a point and click interface, on-line help, ARexx support, and an on-screen video deck with Dynamic Motion Control. You can start a sequence via timer or manually and stop it by rendertime, timer, duration, timecode or frames recorded. You can trigger controls via timer, frequency, period, keyboard, button, ARexx and hardware, and exclude time periods on a per day basis, and record forward or backwards. Using the hardware trigger feature you can set the system up to record when an external event occurs – motion, heat, light or sound, for instance.

VDL costs £350. If you already own *Simpatica*, and therefore the necessary hardware, you can buy the software for £199.

Optonica ☎ 0455 5582282.

Compiler for AMOS Pro nears launch

Owners of AMOS Professional holding their breath for the arrival of a compiler can finally relax. Europress Software are about to release one.

The *AMOS Professional Compiler* will work with all three versions of the language – *AMOS, Easy AMOS* and *AMOS Professional*. Obviously, the *AMOS Professional* interpreter package will be needed to take full advantage of the compiler's command set. It is also claimed that the compiler will produce faster code from standard *AMOS* programs than is currently produced by the earlier *AMOS Compiler*.

In addition to compiling code (which makes it run much faster and independently of your *AMOS* interpreter) the package upgrades *AMOS Professional* to give full AGA support, meaning that up to 256 colours can be used on screen at once. Compiled programs are compressed by up to 80%. As well as individual programs, batches of programs may also be selected for compilation. ASCII files form acceptable input for the compiler, so a programmer may use a favoured editor rather than one supplied with the *AMOS* package.

The *AMOS Professional Compiler* is due for release in mid June, and will cost £34.99 from Europress Software ☎ 0625 859333.

WIDE-CARRIAGE PRINTER LAUNCHED

Canon have announced the BJ-230, a Bubble Jet printer capable of handling sheets of A3 paper.

A3 paper can be used in portrait format whereas A4 paper can be used in both portrait and landscape formats. Printing resolution is 360 dots per inch, at near-laser quality.

The BJ-230 has a reduction feature which can be accessed from its front panel, compressing data in a wide carriage format to A4 landscape paper. The printer will also accept envelopes and overhead transparency film. It comes with eight resident typefaces and two emulation modes. It plugs into the computer's parallel port.

The BJ-230 sells for a recommended retail price of £468.83. Canon ☎ 0800 252223.

TAKE YOUR PROGRAMS TO BITS

Helios Software are distributing *ReSource*, a package which the company claims to be the most powerful disassembler available for any computer.

Published by US firm The Puzzle Factory, *ReSource* disassembles programs into labelled and formatted source code. It comes with an in-built understanding of the Amiga's operating system.

Helios are offering full technical support for the product, which is available for the first time in the UK.

ReSource costs £130 from Helios Software ☎ 0623 554828.

Tooling up for hard disk repairs

Central Coast Software have announced the latest version of their hard disk utilities package, *Quarterback Tools Deluxe*.

Its standard features, such as file undelete, disk reorginisation and user interface, have all been improved. Many new features have been added, including disk recovery, an advanced disk sector editor, Workbench 2 and 3 support, and ARexx support.

A suite of complementary programs is also provided, including *Locator*, which finds files, *Replicator, File* and *Disk Eraser*, which permanently remove information, *Encryptor, Keystroke Finder* and *System Mover*.

Quarterback Tools Deluxe is produced by Central Coast Software ☎ 0101 512 328 6650 and sold in the UK by MicroPACE ☎ 0753 551888. A UK price has yet to fixed, but the projected US price is $125.

On-line information makes inroads

Multimedia development company Scala have been selling Amigas into the sort of big business generally believed to buy nothing but PCs.

Scala's *InfoChannel IC400* system, based around an A4000, can schedule, transmit and update muti-media information to an unlimited number of TV screens.

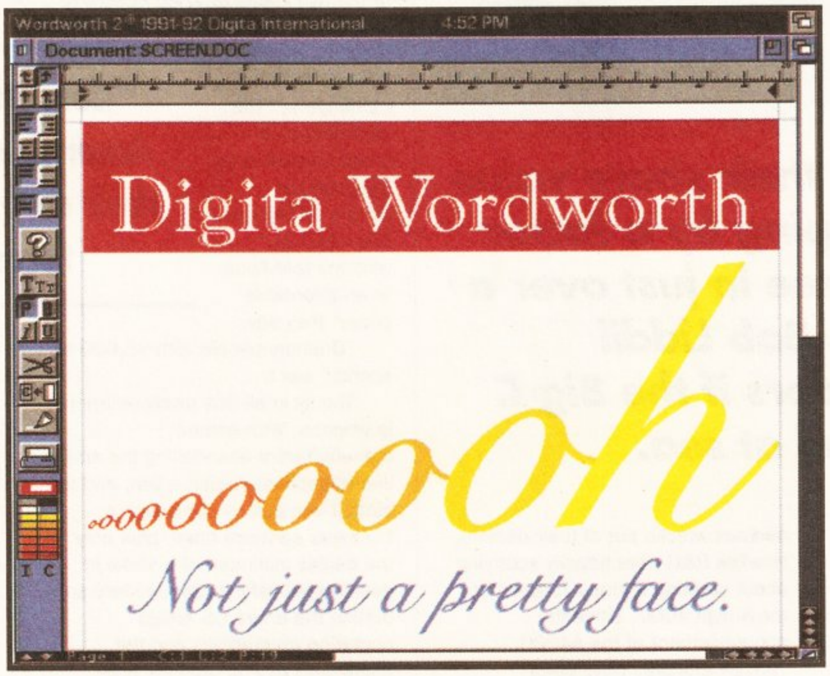
Companies who use Scala include: Esso, Ford, Ericsson Telecom, Nissan, American Airlines, Colgate Palmolive, Shell and the FBI.

Scala UK ☎ 0920 444294.

PRICING CORRECTION

Software Demon's advertisement in this magazine contains the wrong price information for their A4000-30 hard drive systems. The correct prices are: 85Mb for £899, 170Mb for £969, 250Mb for £1,050, 330Mb for £1,250 and 426Mb for £1,499.

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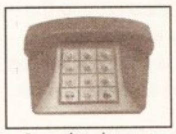
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STATESIDE

With their share value dropping by a factor of three in just over a year, Bob Liddil wonders if the Big C are all at sea.

There can't be many things worse than being on the back of a bucking bull and having the rope break. That's what it must have felt like last month to have been an American Commodore Amiga dealer in the midst of the maelstrom of rumours that were flying about.

First, Commodore America sacked their entire sales force. Then they closed every single one of their sales offices in the USA. Then, without a word of comfort to their faithful dealers, Commodore sat smugly back and said nothing as the rumour circulated that "Commodore are withdrawing from the US" and "NewTek are taking over US marketing operations!"

When the dust cleared and the organisation began answering questions again, the answers left as much apprehension as the rumours.

FEAR AND LOATHING

A spokesman for Commodore commented that: "All sales of Amiga products have been consolidated into a distributor network, eliminating the need for outside sales representatives." When asked about the NewTek rumour, the spokesman simply said: "Commodore and NewTek are entering into a joint promotional effort concerning the A4000 and the A4000 Toaster."

It seems as though it is actually easier to get gold from King Tut's tomb than it is to get a candid statement from Commodore USA. It's clear in a muddy sort of way.

While CBM were busy making nervous wrecks out of their dealers, NewTek R&D were happily scurrying about creating a *Video Toaster* for the Amiga 4000. Since the announcement of the A4000, *Toaster* groupies have been salivating, waiting for NewTek to replace the ageing 2000/3000 platform base with a new jet-propelled *Toaster*. As you might know, in the USA the Amiga is distinctly identified with video and even film special effects, replacing expensive graphics workstations for a fraction of the cost. Prestigious production companies such as Amblin (Steven Spielberg) and Lucasfilms Ltd have invested heavily in A4000 systems. It only stood to reason that the *A4000 Toaster* was on its way.

On April 18, 1993, Commodore made it official. They announced a joint marketing initiative designed to bring the combined marketing power of the two giants of video effects to bear on a marketplace that accepts them as pathfinders. "The idea behind the Video Toaster is to give ordinary people all the tools they need to produce television at an affordable price," they say.

"Ordinary people with $5,000 to spend," say I.

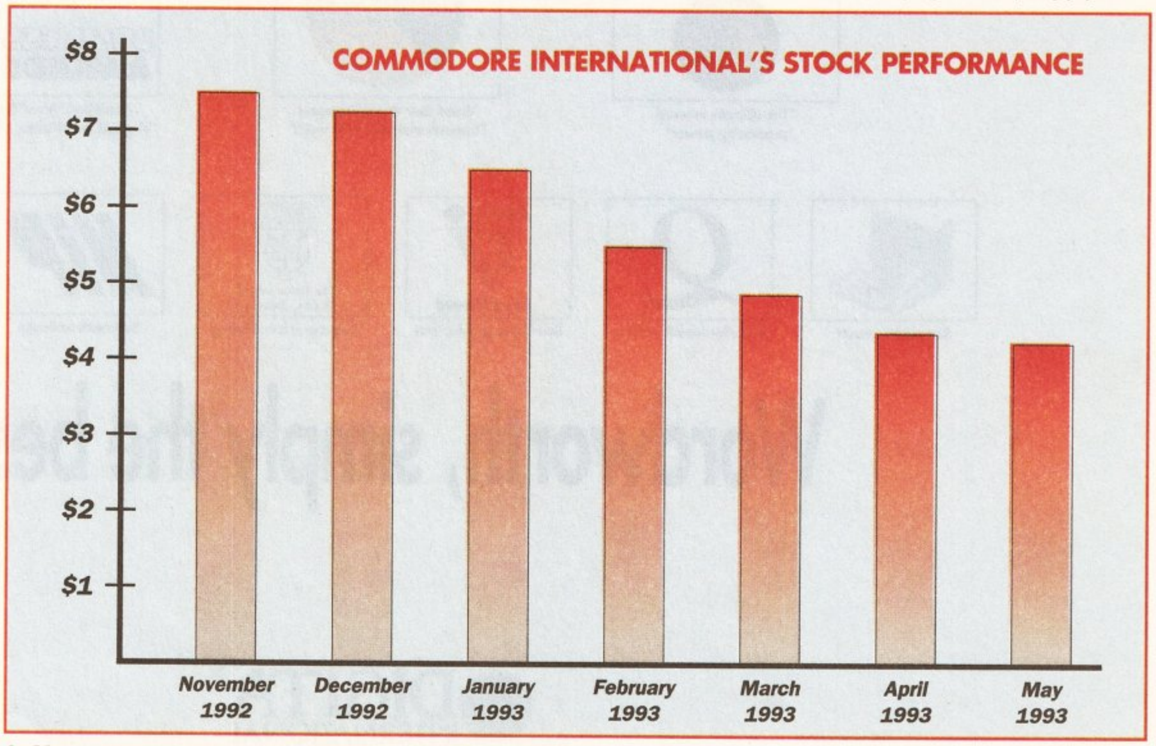
The fly in all this lovely ointment is obvious. With games manufacturers abandoning the Amiga like wildebeest fleeing a lion, and an almost completely non-existent business software base, plus only the barest minimum of a stake in desktop publishing, Commodore are betting the entire US Amiga operation on graphics and the willingness of Phil Ordinary from Pittsburgh to lay out serious money virtually exclusively for the manipulation and manufacture of pictures and sound. This, while ignoring the capabilities of CD-ROM and the obvious benefits derived from placing Amiga systems in schools. The wad is literally bet on one horse!

"Commodore America sacked their entire sales force"

While Commodore seem bent on turning their world upside down, NewTek actually look to have it all under control. At the National Association of Broadcasters' convention in Las Vegas, Nevada, NewTek proudly announced that the new *Video Toaster 4000* would retail at $2,395, which is a lower price than the current flagship product. It will include a switcher with four video inputs, and three internal digital sources. Featuring close to 300 video effects, from wipes to dissolves to complex animated transitions, it promises to be a videophile's dream. Many of the effects feature drop shadows, glints, special textures and smooth colour animation.

If Commodore are going to bet on a horse, they could do no better than NewTek, who have proven again and again that they have the wherewithal to stay in the race. The new *Seaquest DSV* television series being prepared by Amblin and the *Babylon 5* series, already picked up for broad-based syndication, are proof that Hollywood, at least, is still in love with the Amiga.

I'm off to Montreal now to visit a friend who has discovered some interesting tricks involving a scanner, a photograph of Madonna and *VistaPro*. So I'll be fully occupied until next month. This is your Amiga Cowboy saying, "Whoopie-ty-yi-yea."



In March '92 Commodore International's shares were valued at $14.75 each, and predicted to be worth $25 by this time. In fact, they've fallen to less than a third of their value, despite new launches and excellent European sales.



The Amiga Shopper Shareware Collection volume IV

Gus Chandler brings you the full details of all the goodies on this issue's disk.

DISK CONTENTS

Volume IV of the *Amiga Shopper Shareware Collection* is brimming with interesting goodies.

• **OctaMED v2.00** – One of the most powerful sound-tracker packages going. To help you make the most of this feature-filled program, turn to page 94 and follow our introductory tutorial.

• **XOper** – A systems monitor that enables you to keep an eagle eye on exactly what your machine is doing at any given time.

• **Virus Checker v6.25** – A regular favourite on *Amiga Shopper* cover disks, the latest version of *Virus Checker* is fully up-to-date and will ensure that your system stays safe.

• **Move** – A simple but handy utility that copies a file to a specified directory and then deletes the original. It will help you keep your files in the best of order.

• **Pest** – From our AmigaDOS expert Mark Smiddy comes this compact and efficient appointment scheduler. For the full gen, see page 61.

• **JuliaMovie** – An AMOS program that animates a series of eight fractal frames from the Julia set (they're also included on the disk). For details, see the climactic part of our Chaos series on page 64.

• **Source Code** – In this directory you'll find the source code from this month's regular columns. That includes:

AMOS – Code for an easy-to-use file requester that can easily be incorporated into your own programs. See page 68.

Code Clinic – Toby Simpson provides you with a useful assembler routine for generating requesters, based on a program written by an *Amiga Shopper* reader. See page 48.

OCTAMED V2.00

All Workbenches
Archived size: 395,825 bytes
De-archived size: 842,391 bytes

OctaMED is a sound tracker that enables you to use the impressive musical capabilities of the Amiga to the full. You can create, edit and play sounds (a wide selection is included) and more advanced users can use the MIDI support to control external instruments. Every budding Amiga musician should check this out.

When you de-archive *OctaMED* you will need to have a blank, formatted floppy disk available. Don't try to de-archive *OctaMED* to a floppy that has stuff on it already – it's most unlikely to fit. Now, *OctaMED* expects this disk to be called **OctaMED v2.00** and the easiest thing to do is format a disk with that name using this Shell command (do not type a return at the ☛ symbol):

```
format device df0: name ☛
"OctaMED v2.00"
```

An alternative method for telling *OctaMED* where to find itself is using an **assign** command. For example, if you de-archived *OctaMED* to the RAM disk rather than to a floppy, type this command in a Shell window:

```
assign "OctaMED v2.00:" ram:
```

If you have de-archived *OctaMED* to a hard drive, you should add a similar **assign** command to your startup-sequence replacing the RAM device with the path to the directory you've put *OctaMED* in.

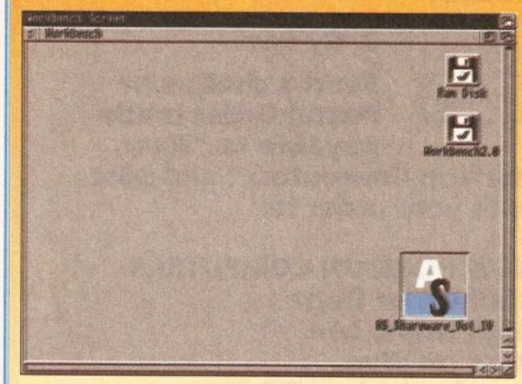
VIRUS CHECKER V6.25

All Workbenches
Archived size: 72,860 bytes
De-archived size: 142,495 bytes

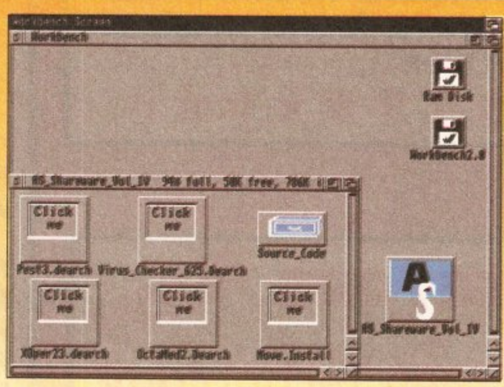
If you've got a previous *Amiga Shopper* cover disk then you'll already have an earlier version of this essential utility for keeping your machine virus-free. Make sure that you do take the time to replace it with version 6.25 – this latest version contains protection against several new and rather nasty little viruses.

Once you've de-archived *Virus Checker* it's simple to install on your system. If you use Workbench 2 or above just drag the **Virus_Checker** icon into the **WBStartup** drawer. Alternatively, copy the **Virus_Checker**

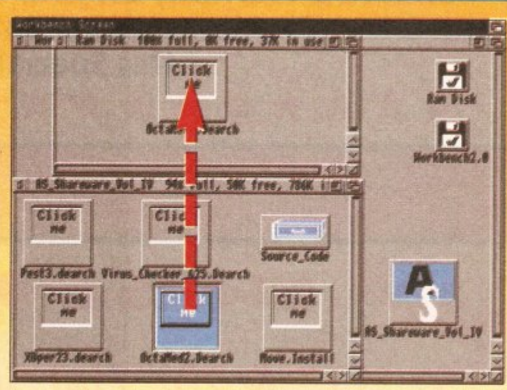
IMPORTANT! HOW TO GET OUT ALL THE



❶ ***Boot your machine with Workbench. Now take your backup copy of this month's cover disk (you have made a backup, haven't you? See the box headed "Vital..." – it is!), write-protect it (move the tab so you can see through the hole), then insert the disk. The Amiga Shopper disk icon will appear in the bottom right hand corner of the screen.***



❷ ***Double-click with the left mouse button on the Amiga Shopper icon and a window opens, displaying the icons for the archived versions of this month's offering of software. Do not double-click on these icons yet – if you do, the archiving utility will attempt to de-archive them, find there isn't any room, and fall over, getting you nowhere.***



❸ ***Instead, double-click on the RAM disk icon. The RAM window opens. Select the package you want to de-archive (say, OctaMED) and drag its icon from the Amiga Shopper window into the RAM window. The red line shows this. Note: OctaMED won't fit in the RAM disk of unexpanded Amigas – you'll need a floppy as the OctaMED text explains.***

VITAL: READ THIS FIRST

The first thing you should do is protect your cover disk from accidents by making sure that it is write-protected – make sure that the movable plastic tab is in the open position, so you can see through the hole. This means nothing can now be written to the disk, especially viruses. If you don't write-protect your disk and end up with a virus on it – well, that's your problem.

The next important step is to make a backup copy of the cover disk – in case any nasty accidents happen while you're busy working with it. The easiest way to go about this is via the Shell. So, open a Shell window and then type the following at the prompt:

```
diskcopy df0: to df0:
```

Your Amiga will now ask you to insert the SOURCE disk (that's the cover disk) in df0: and then press the Return key to continue.

Your computer will now read some of the information from the disk, and then another System Requester window appears asking you to insert the DESTINATION disk (that's the empty disk you want to make a copy of the cover disk on). You'll find that you need to swap disks several times – a System Requester window will appear each time, prompting you to insert the appropriate disk.

If you have more than one floppy drive, you can of course copy from one drive to the other by using the following instruction:

```
diskcopy df0: to df1:
```

Right, now that you've made a copy of the cover disk, hide the original in a very safe place and work *only* with the duplicate.

CAN'T READ THE DISK?

It's rare, but it does happen that out of the tens of thousands of cover disks that we duplicate a few end up corrupted. You'll know if this has happened because you'll get a System Requester window saying "Not a DOS disk", or a Requester will pop up to tell you just as unhelpfully that a READ ERROR has occurred while one of the programs was de-archiving. Don't panic. We will cheerfully replace your naughty disk. Just send the faulty disk (along with a self-addressed envelope – padded "Jiffy"-style ones are the best) to:

***Amiga Shopper* 27**
Discopy Labs
PO Box 21
Daventry NN11 5BU

With the disk please include a brief note saying what the problem is. Also mention what Amiga you're using and the version of Workbench that you are running. A replacement disk should plop through your letterbox within a fortnight.

file to your **c:** directory and add this line to your startup-sequence :

```
c:Virus_Checker
```

Once *Virus Checker* is installed it will automatically scan any floppy disk that's inserted for viruses. If a suspected virus is found you'll be informed and given the option to kill the offending code.

It is very important to remember though that self-booting disks such as most games may well use non-standard bootblocks which virus checkers will interpret as possible viruses. *Do not attempt to kill these "viruses"* or you will render those disks completely useless. You have been warned!

XOPER2.3

All Workbenches
Archived size: 39,563 bytes
De-archived size: 84,387 bytes

XOper will help you keep a beady eye on what your Amiga is doing – that's because it's a systems monitor. You'll find that it's most useful when you are multi-tasking (that is, running several different processes concurrently) and it will help you keep track of such things as CPU usage, the state of the stack, what ports are in use and how much memory is tied up.

XOper also provides you with a range of commands for changing the priority of tasks or removing them altogether. Other commands such as **snoop** enable you to examine what a particular task is doing, while the **files** command will let you know the size and name of all currently-open files along with details of whether or not they are locked. Further instructions such as **frags** report on the state of memory fragmentation while the **screens** and **windows** commands keep tabs on the size, addresses and titles of all screens and windows.

If you install *XOper* (copy it to your **c:** directory) you can add a command to your startup-sequence that will start *XOper* as a background process. That means it will sit there invisibly until you invoke it by simultaneously pressing the two Amiga keys and X. Alternatively, you can start *XOper* from a Shell window by typing:

```
run c:xoper
```

(assuming that you've put *XOper* in your **c:** directory). There are 13 different parameters that you can use in conjunction with this command – for full details on these make sure that you study the file **XOper.doc.**

MOVE

All Workbenches
De-archived size: 1,380 bytes

The **move** command, which is used from the Shell, is a handy little housekeeping routine that will help keep you from leaving multiple copies of programs sitting in different directories. That means you should always be able to track down the most recent copy of a program.

Using **move** is simplicity itself. Say for example that you want to copy a program called **"any_prog"** from the current directory to a directory called **"useful_stuff"** and then delete **"any_prog"** from the current directory. Normally you would have to type the following commands:

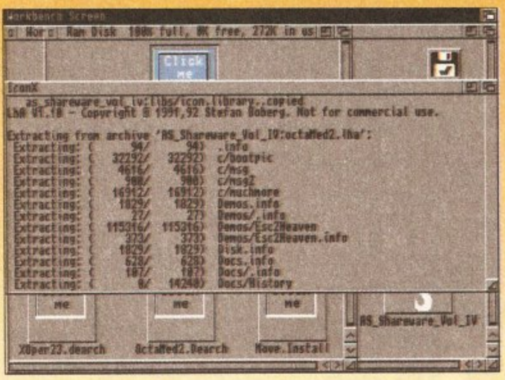
```
copy any_prog useful_stuff/
delete any_prog
```

Move enables you to achieve the same result with a single command:

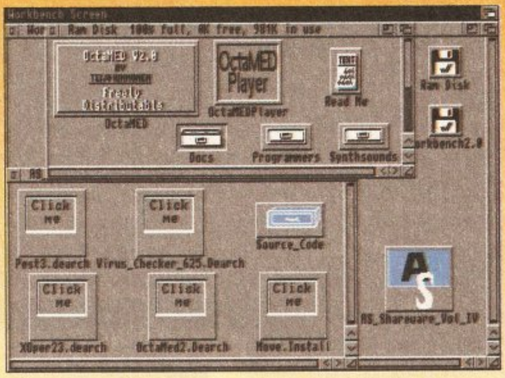
```
move any_prog useful_stuff/
```

What could be handier? AS

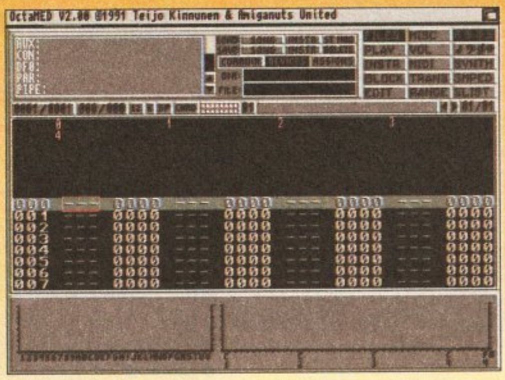
PROGRAMS ON YOUR COVER DISK



❹ ***Double-click on the new OctaMED icon in the RAM window. A window with the name IconX appears and some text scrolls past – a report from the de-archiving utility LhA. This window soon vanishes and your screen should appear the same as it was in picture 3. That's because the contents of the RAM window are not automatically updated.***



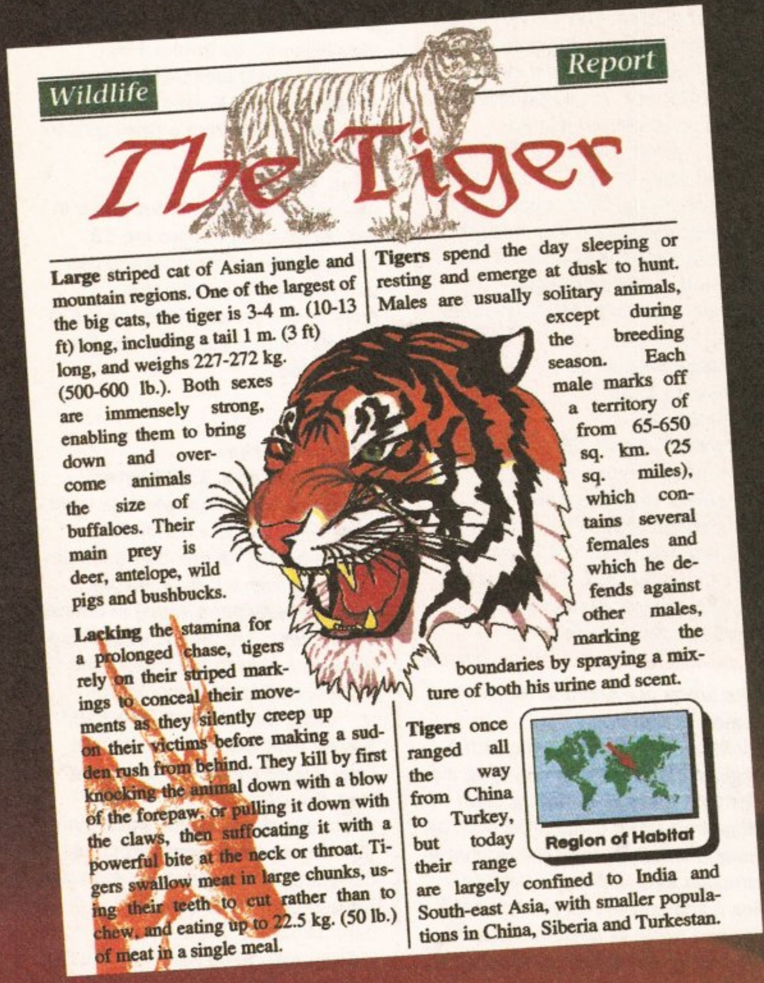
❺ ***Close the RAM window (click with the left mouse button on the close gadget in the top left corner) and then re-open it (double-click on the RAM icon). You should now see the different icons for the OctaMED package displayed – though you may have to drag the icons around a bit so they don't appear on top of each other.***



❻ ***Now just double-click on the OctaMED icon and off you go into the program – this is the opening screen you should get. (But remember to follow the instructions on these pages about setting up your assigns or disk names for OctaMED or it won't work properly.) To de-archive the other programs on the disk, just follow the same steps!***

The Best Word Publish
(Amiga Forma

We'd simply call it the best Amiga Word Processor. But if after using it, the experts insist on calling Final Copy II the best Word Publisher as well, we're not complaining!


Wildlife Report

The Tiger

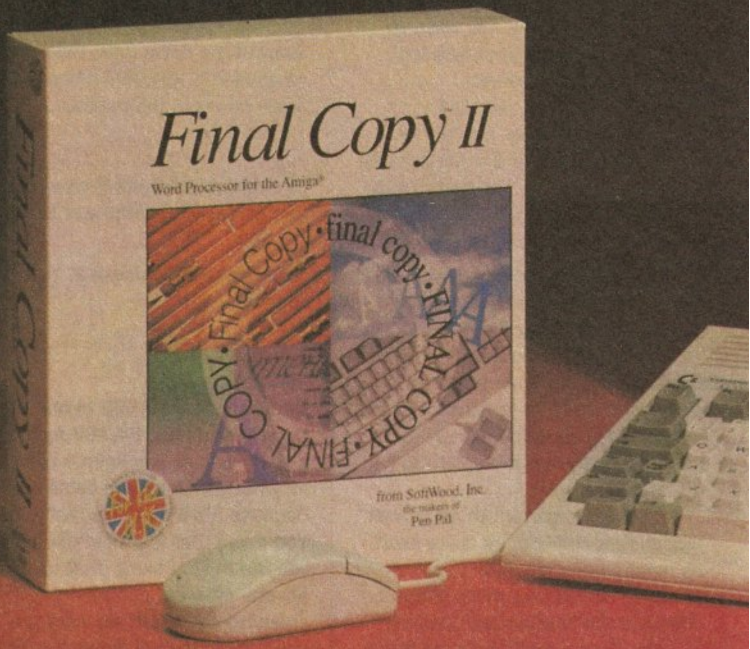
Large striped cat of Asian jungle and mountain regions. One of the largest of the big cats, the tiger is 3-4 m. (10-13 ft) long, including a tail 1 m. (3 ft) long, and weighs 227-272 kg. (500-600 lb.). Both sexes are immensely strong, enabling them to bring down and overcome animals the size of buffaloes. Their main prey is deer, antelope, wild pigs and bushbucks.

Lacking the stamina for a prolonged chase, tigers rely on their striped markings to conceal their movements as they silently creep up on their victims before making a sudden rush from behind. They kill by first knocking the animal down with a blow of the forepaw, or pulling it down with the claws, then suffocating it with a powerful bite at the neck or throat. Tigers swallow meat in large chunks, using their teeth to cut rather than to chew, and eating up to 22.5 kg. (50 lb.) of meat in a single meal.

Tigers spend the day sleeping or resting and emerge at dusk to hunt. Males are usually solitary animals, except during the breeding season. Each male marks off a territory of from 65-650 sq. km. (25 sq. miles), which contains several females and which he defends against other males, marking the boundaries by spraying a mixture of both his urine and scent.

Tigers once ranged all the way from China to Turkey, but today their range are largely confined to India and South-east Asia, with smaller populations in China, Siberia and Turkestan.

Region of Habitat

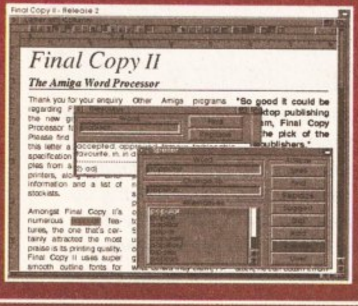


Final Copy coined the phrase "Perfect Printing on **any** Printer".
We mean it - this document proves it!

Created in Final Copy II and printed on a standard 24-pin Citizen Swift, it shows a small number of Final Copy II's features: Smooth Scaleable Outline Fonts, Multiple Columns, Drawing Tools for Boxes, Borders, Shadows, Lines and Arrows, White-Out Text, Text Printed over Graphic Images, Text Obliquing, Auto-Flow Text around Graphics and of course, Import of Colour and Mono Graphics Pictures.

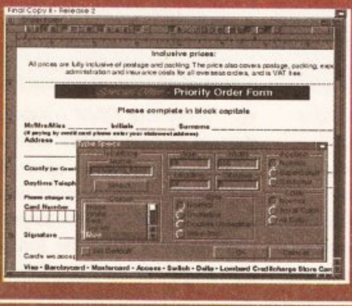
Final

Word Publishers go beyond simply producing normal letters and documents (at which Final Copy II naturally excels) and progress into a world where *how the whole document looks* is just as important as *what it says*. Admittedly, this can be achieved with Desk Top Publishers, but they can't easily be used as Word Processors, especially when a good looking letter needs creating quickly - they're far too cumbersome. This is where Final Copy II offers the perfect balance between the two requirements. Ease and speed of use, combined with complete control and perfect final printed presentation.



Document creation is so simple with 28 On-Screen Buttons for routine formatting and navigating commands, like Auto-Hyphenation. With *true* WYSIWYG display, you can even edit whilst your pages are magnified up to 400% (or reduced). Long documents are supported with Title/Master Pages, Style Sheets, Left/Right Page Binding Offset and Auto Numbering. Because your text needs to be perfect, the British-English Collins Proximity Speller combined with the Thesaurus (for that added inspiration) help you to produce the precise, printed page.

Compugraphic, Adobe Type 1 PostScript or Nimbus Q PostScript? If you *want* lots of font you can *have* lots of fonts! Final Copy II can use thousands of superior Adobe Type 1 or Nimbus fonts (the same as those used on professional publishing systems). Both these types are PostScript font but unlike all other Word Processors you don't need an expensive PostScript laser to use them! Fin Copy II *will* print them on PostScript lasers, *or* any graphics capable printer. This includes the do matrix or ink-jet you probably already own. Even if you have your own Compugraphic* font librar you'd still like to use, Final Copy II is fully compatibl outputting to any graphic printer. Final Copy II unrivalled in its range of fonts supported, and as you ca see here, you have complete control over text formattin When using the outline typefaces included, or an additional fonts, they'll output perfectly' - no matter wha size they're scaled to - with absolutely *no* jaggie Opening multiple documents also allows editing whil printing in background mode (free memory dependent).



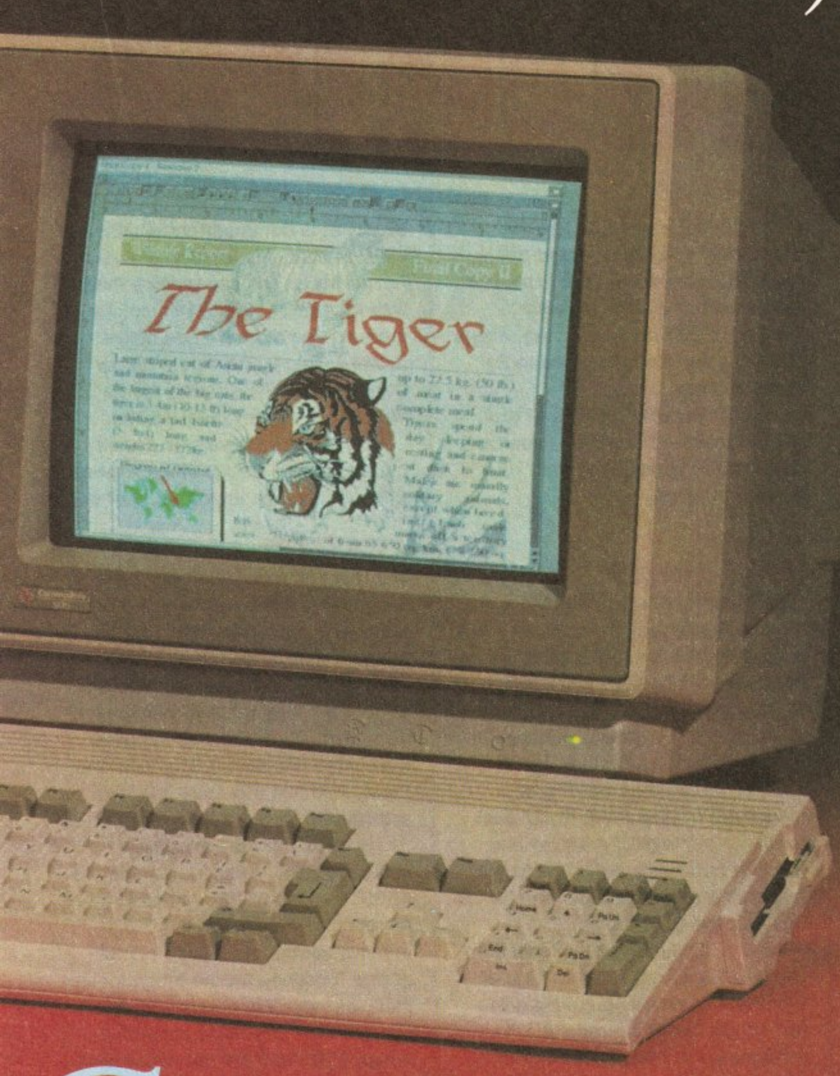
Compatible with all Amigas from A500 to the latest A1200/A4000 ranges with either a second floppy or a hard drive. A minimum of 1Mb. of available free RAM is required (A600 hard drive - 1.5Mb.) however, as with all advanced graphical programs, extra memory (eg. 1.5/2Mb. - the more the better) will be required to exploit all features fully.

Available from all good Amiga Software Dealers,
or from SoftWood Europe - please phone for a list of nationwide stockists.

ng Program of its Type
s words not ours)

Amiga Format think we have the Best Word Publisher. We'll show you why with a list of features that users tell us are important (below).

If you'd like to know who's also chosen Final Copy, Commodore specify it as an option with some of the most powerful Amigas available in the United States. What better recommendation could you have?

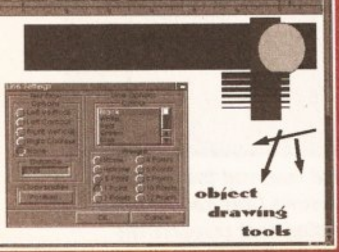


	Feature	Wordworth 2	Final Copy II
Fonts and Printing	Compatible with Standard Amiga Workbench 2 Compugraphic Fonts	YES	YES, But would Suggest use of Better PostScript Fonts
	Compatible with Standard Adobe Type 1 and Nimbus Q Scaleable Postscript Fonts	NO/NO	YES/YES
	PostScript Font Outlines on all Printers	NO	YES
	Maximum Number of PostScript Fonts	Limited to a total of 35	Infinite
	Download Extra Fonts to PostScript Printer	NO, Can't download extra fonts	YES, Automatic
	Landscape (Sideways) Printing on all Printers	NO	YES, Automatic
	Reclaim Printing Resolution (Quality) of Scaled (Reduced and Enlarged) Graphic Images	NO	YES, Same High Quality when Reduced and Enlarged
	Print any Text or Graphic in Colour	YES	YES
	No. of Colours Printed in Imported Pictures	Limited by Screen Mode Used	Output as Original Image
	Graphics Printing (HAM & IFF ILBM)	Good if Graphics not Scaled	Always Best Possible
	Text Width (Compress and Expand)	NO	YES
	Variable Text Obliquing (Slanted Text) Both Positive and Negative Attributes	NO	YES
Graphics	Box, Rounded Box, Circle, Oval, Line, Variable Border & Arrow Drawing Tools	NO	YES
	Crop (Trim) to Size Imported Graphics	NO	YES
	Supports A1200/4000 AGA Chipset	YES, 256 On-Screen Colours	YES, 256 On-Screen Colours
	Create Border around Graphics and Pictures	NO	YES
Editing and Formatting	British-English Spelling Checker	YES, Collins Proximity with Legal & Medical Supplements	YES, Collins Proximity with Legal & Medical Supplements
	British-English Thesaurus	YES, Collins 826000 Synonyms	YES, Collins 826000 Synonyms
	Page View Magnifications and Reductions	One Fixed Print Preview	7 Variable stages - 25% to 400%
	Edit Document while Magnified or Reduced	NO	YES
	Search & Replace (150 words in 9000, 7 Pages)	61 Seconds (On Amiga A1200)	7 Seconds (On Amiga A1200)
	Index and Table of Contents	YES, Automatic	NO, Requires Manual Entry
	Multiple Newspaper Style Snaking Columns	YES, 2 to 32	YES, 2 to 6
	Style Sheets, Master Pages, Title Pages	NO	YES
	Uses Standard Amiga Clipboard for Cutting & Pasting to and from Different Applications	NO	YES
	Small Caps Typographical Control	NO	YES
Genearal Features	Conforms to Commodore's Amiga Standard 'Look & Feel' Guidelines	NO, Non Standard User Interface	YES
	On-Screen Maths (Column Addition)	NO	YES
	Import ASCII Text from any Word Processor	YES	YES
	UK Registration, Upgrade and Support	YES	YES
	Free Memory Required	1.5Mb. Minimum More Recommended	1Mb. Minimum More Recommended
	Free Ongoing Technical Phone Support	NO, £38 per year after 60 days	YES, Free of Charge
	Recommended Retail Price	£129.95	£99.95

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Transform your machine

Jealous of the latest Amigas? No need! Jolyon Ralph explains how to transform your A500 or 500 Plus into an A1200 (almost). Then we look at accelerators that can beef up any model of Amiga.

Now that Commodore have launched their new wonder machine, the Amiga 1200, many A500 owners may be feeling a little left out of things. Is it time to get rid of the old 500 or is there life left in it yet?

Don't despair! Not only is the A500 a fine machine that is still up to most tasks you're likely to want to throw at it, but one of its great pluses is that, if you do find you want more from it, it is easily expandable.

Over the next few pages you will find modifications and expansions to upgrade your old 500 so you won't be left out in the future. Most of these modifications apply only to the Amiga 500. Some will work on the Amiga 500 Plus. The newer Amigas, the 600 and 1200, are in too many respects radically different machines, so this section does not apply to them. If you own an Amiga 600 or 1200, do not waste your time opening up your machine – turn straight to page 28 for information on accelerators.

First I'll describe how to open your Amiga 500, a scary prospect if you haven't attempted these sorts of things before. If you're at all worried, it might help if you read through the procedures first and make sure you know what you are planning to do.

WARNING: Before you start on any of these modifications remember the following: opening and fiddling with your machine will void any warranty, and if anything goes wrong you only have yourself to blame. Neither the author nor *Amiga Shopper* can be responsible for any damage you do to yourself or your machine by following these procedures.

VERY IMPORTANT WARNING: Always disconnect your Amiga from the mains before carrying out any modifications – 240 volts can kill.

SITTING COMFORTABLY? THEN WE'LL BEGIN

Unfortunately, the only way to tell what you can fit on your circuit board is to open up your machine and have a look. Opening your Amiga 500 is not difficult. See the diagram at the bottom left for instructions on removing the six screws.

Next turn your Amiga the right way round again and remove the top cover. Below right is a diagram showing the next four screws and the shielding over the edge connector, all of which must be removed.

There are now four small metal tabs that you will have to bend into the upright position. Don't worry too much if these break off – they are not that important.

You can now remove the metal shielding. Be careful! Some of the metal edges are very sharp, and it is very easy to cut yourself.

Now you can determine what revision machine you have, and what you can fit.

If, immediately underneath the square chip in the middle, you find this text –

C= B52/ROCK LOBSTER GRR/JSP/TF/GUAY RVW/VFA/DCA

– then you have an early revision 3 motherboard.

On later boards this text (or something similar) is printed below the floppy disk drive. Check this text and it will tell you the revision number, either rev 5 or rev 6a. Amiga 500 Plus owners have revision 8a motherboards.

Note down the revision of your motherboard – this will be important when you're considering what you want to attempt.

HOW FAT IS YOUR AGNUS?

Next, examine the square chip in the middle of your Amiga – on most machines labelled "Fat Agnus", or on earlier machines U2 – and check the number on the top.

- **8370 or 8371** means you have an early Fat Agnus chip which won't allow any more than 512K (half a megabyte) of Chip RAM. If you want to take advantage of graphics and desktop publishing programs to the fullest, it's a good idea to replace this with the 8372A chip.
- **8372A.** If you've got this chip then you're in luck. Upgrading to 1Mb of Chip RAM is simple, requiring only two simple board alterations (assuming you have 1Mb of memory installed).
- **8372B.** Either you've got the wrong chip fitted, or you've got a Meg-A-Chip 2Mb Chip RAM upgrade fitted, or it's really an Amiga 3000 you've opened up.
- **8375.** You have an A500 Plus. Many of the upgrades described here (including those on Kickstart and Chip Memory) are not necessary on your machine.

AND DENISE?

The final check is the Denise chip. It is the second-largest rectangular chip on the motherboard, immediately below the two big blue capacitors in the top left corner. Check the number on the chip:

- **8362.** The R? number after this chip (for example, 8362R8) is not important. This is the older Denise chip fitted to almost all Amiga 500s. You can replace this with the newer "Super Denise" for more screen modes – see below.
- **8373.** This is the newer "Super Denise" chip, fitted to the Amiga 500 Plus and a very few later A500s.

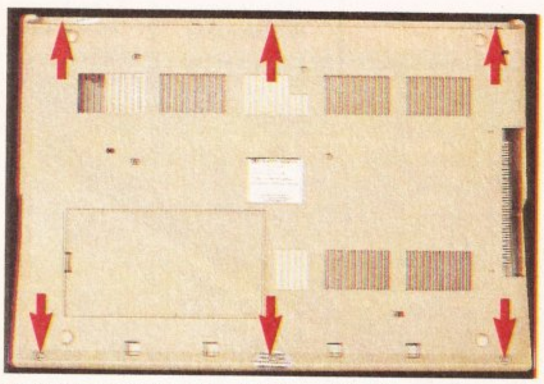
Note down the version of both the Agnus and Denise chips – these will both become important later on.

KICKSTART

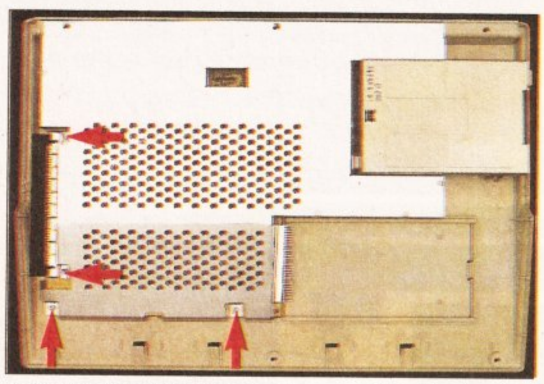
The most obvious difference between the A500 and the new Amiga 1200 is the new Kickstart, the ROM-resident part of the operating system used to load or "bootstrap" the rest of the operating system, Workbench, from disk. The A500 was supplied with either Kickstart 1.2 or 1.3, and the A1200 has Kickstart 3.0 fitted as standard.

Kickstart 3.0 is based on Kickstart 2.04 (which is found in the A500 Plus and A600). Although there are considerable internal improvements, and a large number of new functions for the programmer, many of these are purely to support the new AGA chipset found in the Amiga 1200 and are not necessarily of much use to the A500 owner. Many of the best changes (like PostScript printing, localisation – the ability to run Workbench in another language – and much easier device driver handling) are available to Kickstart 2.04 users with the disk-only Workbench 2.1 upgrade.

Why should you upgrade? Many

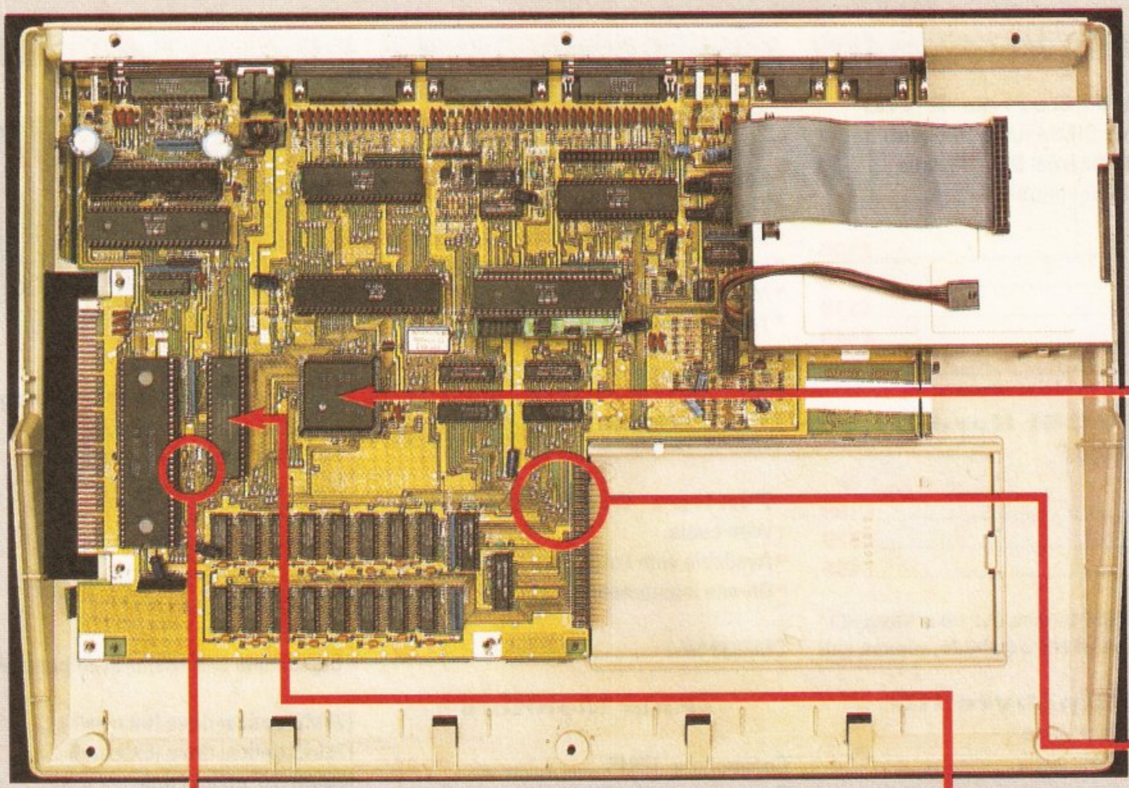


To open up your Amiga, turn it upside down and remove the six screws (arrowed here) on the underside. Some Amigas use standard cross-headed screws, others are held together with Torx (hexagonal) screws.



Once you have unplugged and removed the keyboard, remove the four remaining screws (arrowed above). Then remove the metal shielding that protects the edge connector on the left of the Amiga.

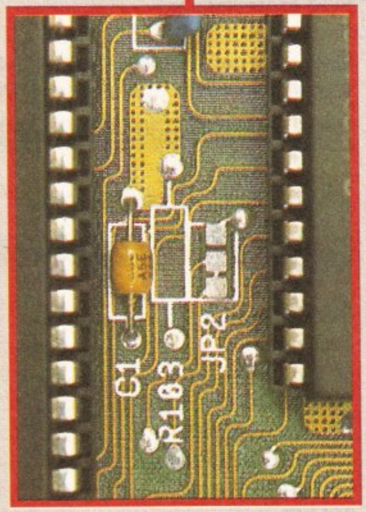
A CLOSE-UP OF THE A500 REVISION 5 MOTHERBOARD



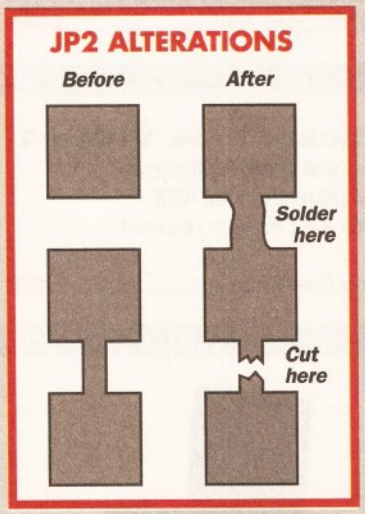
Here are the Kickstart ROM and the modifications to gain 1Mb of Chip RAM on a revision 5 machine. Read the main text before you begin! For info on the Denise chip, see the revision 6 diagram on page 24.



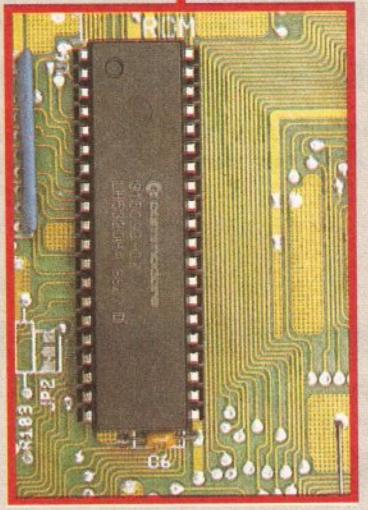
The Agnus chip. If the one on your board is numbered 8370 or 8371 it needs to be replaced with the newer 8372A chip so that you can access up to 1Mb of Chip RAM.



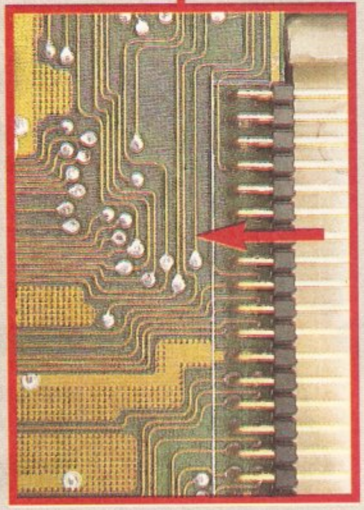
The three solder pads here make up JP2. To complete the 1Mb Chip RAM conversion, first carefully cut the track between the middle and the lower with a sharp craft knife (see the diagram above right).



Next heat up a soldering iron and add a small blob of molten solder to the top pad. With the hot iron gently spread this over to connect the top to the middle pad.



The Kickstart ROM, in the same position for all revisions. On one end of the chip is a semi-circular indent which must point up the board – i.e., towards the back. It should be next to a white "1" printed on the board.



There are four small solder pads just across from the eighth pin down on the edge connector. Cut the track leading to the pad nearest to the edge connector (arrowed above). Be careful not to cut the wrong track.

programs, especially serious applications, now only work under Kickstart 2.04 or higher. You may even find with programs you already use that future updates will not work without the new Kickstart. If you're buying new software, make sure it features the green "Release 2.0 compatible" sticker.

Workbench 2.04 (supplied with the Kickstart 2 upgrade kit) is a vast improvement over the earlier Workbench efforts. Many people gave up using the original Workbench 1.2/1.3 and use the Shell or CLI instead. Workbench 2.04 was rewritten to be much easier to use, particularly for the new user – you can now do directly from Workbench almost anything that previously needed the Shell.

What's more, Workbench 2 and above look a lot nicer than 1.3. You can have custom backgrounds, custom fonts and your own error sounds.

Installing Kickstart 2.04 in an A500 is easy, as long as you make sure you buy the full Commodore upgrade kit. The upgrade kits now come in three flavours:

❶ **Kickstart/Workbench 2.04.** This contains the 2.04 Kickstart ROM and Workbench 2.04. This is now out of date, so you may be able to get one of these packs at a knock-down price, and you can always buy the Workbench 2.1 upgrade later.

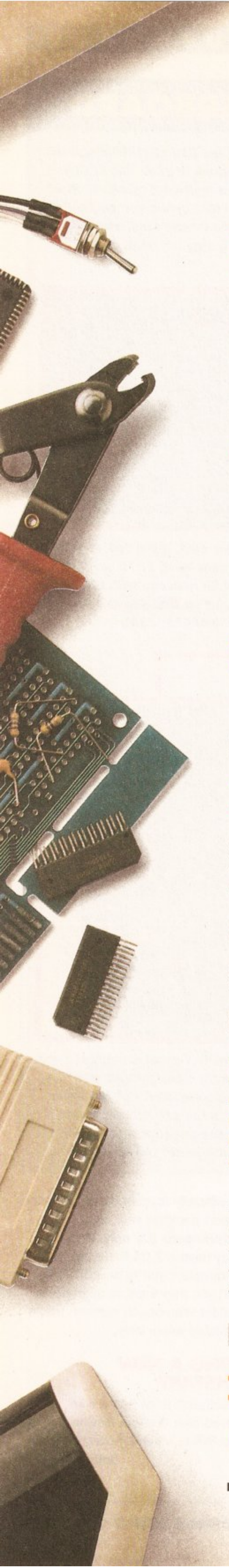
❷ **Workbench 2.1 with Kickstart.** This contains the 2.04 Kickstart ROM and the new Workbench 2.1. There are a few differences between 2.1 and 2.04 that make the newer version worth getting, although at the time of writing the pack has not yet been officially launched and the price of import packs is very high.

❸ **Workbench 2.1 only.** If you already have a 2.04 Kickstart ROM (for example if you're an A500 Plus owner) you may want to upgrade to the latest Workbench version, which is available separately.

FITTING A NEW KICKSTART

The Kickstart ROM has a wire soldered over the top. Beware buying cheap ROMs – some sources do not

continued on page 24



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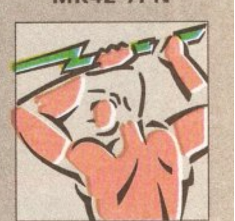
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continued from page 21

supply the official parts, only ROMs without a wire over the top, which may require some soldering to install in early A500s.

You will need to cut the wire if you have a newer Revision 6a Amiga. On older Amigas, keep the wire intact.

Extracting a rectangular chip from the motherboard is very simple. Use a flat-bladed screwdriver to gently ease *both* ends of the chip up from the socket. Do not try and pull the chip out from one end only, because this will bend some of the legs. If you do bend some of the legs then *gently* bend them back into shape with a pair of pliers.

ANOTHER WARNING: Observe anti-static precautions when handling any electronic components. Static electricity can kill, or seriously damage, the sensitive integrated circuits in your Amiga. Earth yourself by wearing a commercially-available anti-static wrist strap or else by touching an earthed conductor such as a radiator while handling chips, and don't touch the components any more than necessary. Always handle chips by the black plastic case – try to avoid unnecessary contact with the metal legs.

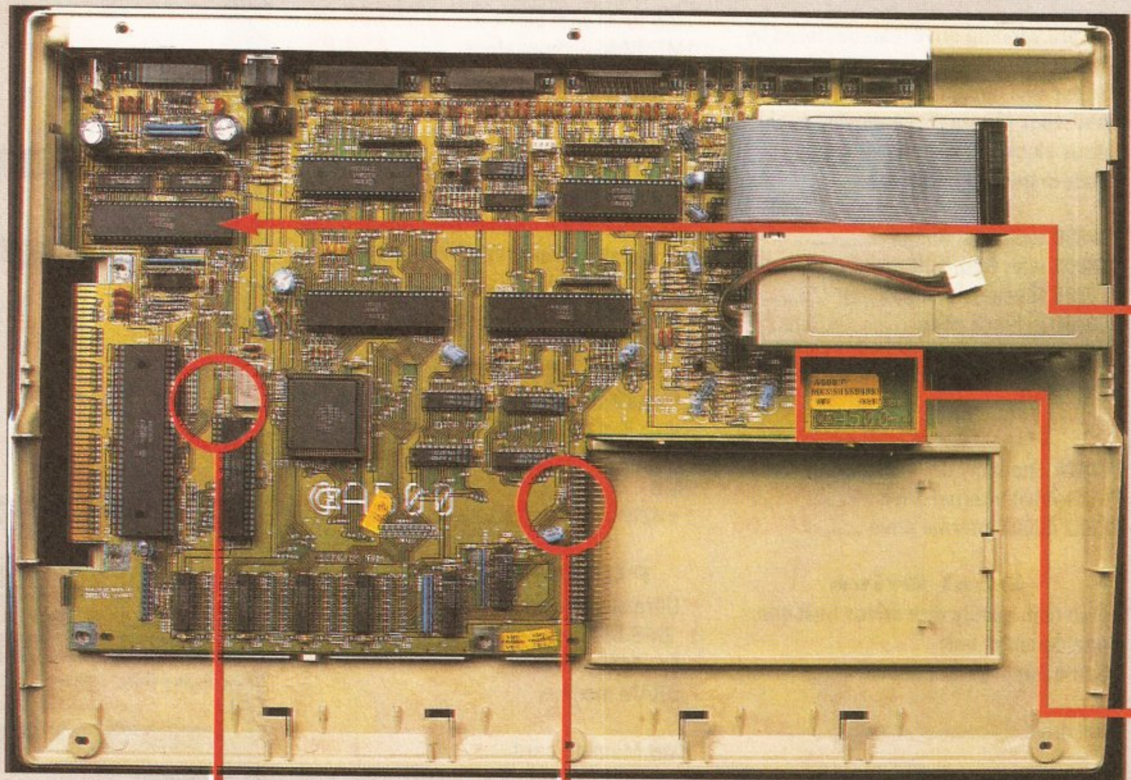
By now you should have safely removed your old Kickstart ROM from your A500. You could keep this to fit into a Kickstart switcher, but most people never want to go back to Kickstart 1.3 after using 2.0.

See the diagram on the previous page for information on how to insert the new chip the right way round. Gently press the chip into the socket, making sure you don't bend any of the pins too far.

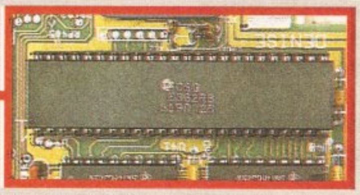
If you do not have a hard drive, then installation is now finished. You can put your Amiga back together (unless you plan to make other modifications) and boot your new Workbench 2 disks.

With a hard drive all you need to do, after reassembling your Amiga, is connect your hard drive and run the **Install** program on your 2.0/2.1 Install disk. This will copy over the necessary Workbench 2 files to your hard drive. After this, reset and you have Workbench 2.

A CLOSE-UP OF THE A500 REVISION 6A MOTHERBOARD



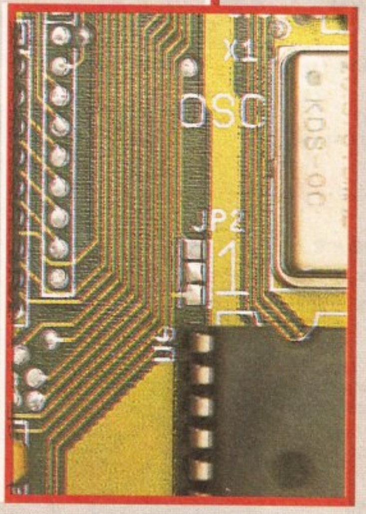
Here's how to locate the parts of the circuit board that need to be altered for 1Mb Chip RAM on revision 6a boards. Also shown is the location of the Denise chip, which is the same for all boards.



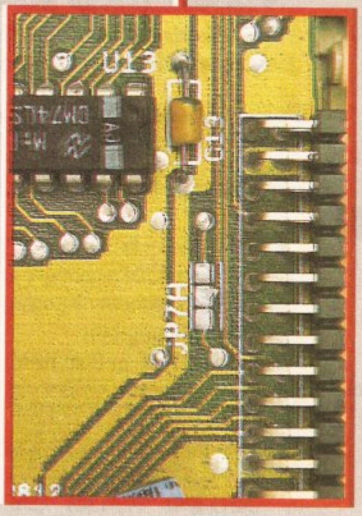
The Denise chip can be replaced by the Super Denise (number 8373) to give several new display modes including Productivity, with a resolution of 640x480 displayable on a multisync monitor.



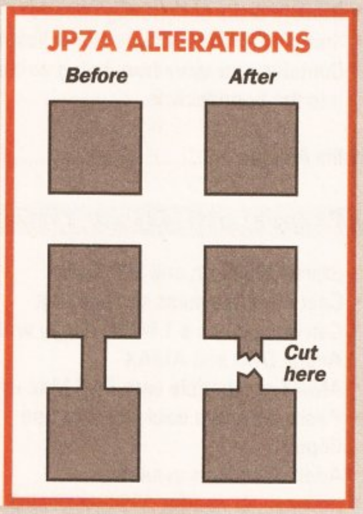
Later revision boards have their revision number printed on this area, below the disk drive. Make a note of this number, because some of the modifications are dependent on which revision Amiga you have.



JP2 is in a slightly different place on revision 6a machines, but the modifications to be made to it are exactly the same as for a revision 5 machine. See the bottom left of the diagram on page 21 for details.



The difference is in JP7A, which is not present on revision 5 boards. The existence of this group of pads makes the conversion much easier for revision 6a owners. Above right is a diagrammatic representation.



JP7A is located next to the trapdoor RAM connector. Using a sharp craft knife, cut the connection between the two lower pads. Be careful, because repairing incorrectly-cut tracks can be difficult.

A CHIP OFF THE OLD RAM

There are several different kinds of Random-Access Memory that your Amiga can use. There are two main types, called Chip RAM and Fast RAM. Chip RAM is used for programs, graphics and sound, while Fast RAM can only be used for programs, but programs in Fast RAM run faster.

Because graphics and sound can only be used in Chip RAM, however much Fast RAM you add you will not be able to use programs that require a lot of graphics or sound memory – for example, using *Deluxe Paint 4* in Hi-res Interlace 16-colour mode.

Newer Amigas, like the A1200, can use up to 2Mb of Chip RAM, allowing far better use of graphic-intensive programs. However, you can upgrade your old A500 to take advantage of more Chip RAM.

If you have an A500 Plus you already have 1Mb of Chip RAM fitted to your machine. To upgrade to 2Mb of Chip RAM, all you need to do is buy an A500 Plus 1Mb RAM upgrade (the Commodore A501+ for example). Any other RAM you add to your system (RAM added to an external hard drive interface, for example the GVP HC8+) is Fast RAM.

If you have an A500 with a half Mb expansion fitted (totalling 1Mb of RAM), you probably have the most common set-up, a half Mb Chip RAM machine with a half Mb of expansion (or "slow") RAM. Slow (expansion) RAM is the least useful of all memory types. It has the major disadvantages of both Chip RAM (programs operate slowly in it), and Fast RAM (it cannot be used for storing graphics or sound).

All Amiga 500s can be upgraded to convert this less-useful slow RAM into far more useful Chip RAM, essential if you want to use *Deluxe Paint 4* or any other graphics-intensive program to the full.

FITTING NEW CHIP RAM

This is an operation that involves handling static-sensitive components and a very simple soldering job that anyone with a soldering iron should feel competent to attempt.

First, check which revision motherboard and Agnus chip you have. If you've got a revision 3 board, read this fully before deciding whether to proceed or not – it's not as easy as on revision 5 or 6a machines.

You will need an 8372A Agnus chip. If you bought your A500 with a half Mb expansion fitted by Commodore, it's highly likely you have this chip already, in which case skip the next stage.

If you do not have this chip, it is available for around £50 from most Amiga dealers, although you may prefer to ask your dealer to fit the chip for you. The removal of the old Agnus chip from your motherboard is by far the most difficult part of this operation. Without the right tool (a PLCC chip extractor) it's very easy to damage the chip socket when removing the chip.

If you do feel lucky, use two very small flat-bladed screwdrivers at opposite corners of the socket to lever the chip out.

Next, you need to mask pin 41 on the 8372A Agnus chip before insertion (unless you live in North America or anywhere else that uses the NTSC video standard, in which case ignore this paragraph). See the diagram below for details.

Once the older Agnus is removed, insert your new 8372A chip. Remember to align the chip in the same direction as the original. On one side of the square socket you will see the number 1 printed on the motherboard. Align the top of the chip with this when inserting it.

When everything is connected up again, test your Amiga with the new chip. It should work as before (still with half a Mb Chip RAM and half a Mb Fast). If it does not work, check you have the chip installed correctly.

- If you get a solid green or yellow screen, you probably either have a faulty chip or you have installed it incorrectly.
- If you get something that looks like a normal screen but either stretched out (so you lose some of your Workbench screen) or with a very fast rolling display, you have not insulated pin 41 correctly – remove the chip and insulate the pin.

Now you have to make two small modifications on your motherboard. These depend on the revision of your motherboard.

• Revision 6a

First find JP2 on the motherboard. This is made of three small squares of solder, the bottom two connected by a small thin track.See the diagram on page 24 for details of what to do here. Next find JP7A – next to the trapdoor RAM connector – and carry out the modifications also described in the diagram on page 24.

• Revision 5

This modification is very similar to the Revision 6 procedure described above, but there is no JP7A to change, so you will have to find and cut a track on the motherboard. See the diagram on page 21 for the full details.

• Revision 3

Oh dear. This is a tricky one. Most people regard it as impossible to upgrade the revision 3. It isn't, but it's certainly not for the inexperienced. The following modifications are needed:

On the board there is a connection between pin 59 on the Fat Agnus and pin 52 on the 68000. (The top left pin on the 68000 is pin 1. Count downwards from there, and then from the bottom right to the top right for the highest numbered pin.) This must be cut, and a small piece of wire added to connect pin 59 on the Fat Agnus to pin 47 on the 68000.

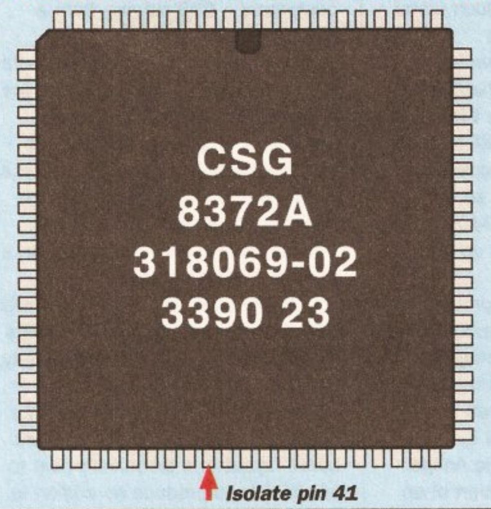
Tricky? Yes, it is. If you feel uneasy about doing this, then perhaps it's time to retire your old A500 and buy a new machine.

When you've successfully completed all this, put your Amiga back together and power up. Type **AVAIL** from the Shell and you should have one million bytes of graphics (Chip) memory available. If you still only have half a Mb of Chip RAM, then double-check all your connections.

If, after you have made the alterations, your Amiga seems more unreliable than before, then check the RAM chips in your expansion. Commodore A501 boards are usually fine, but some third-party boards (particularly older 16-chip boards) may be too slow to use as Chip RAM. If your system is unreliable try a new, four-chip, RAM expansion. This should solve the problem.

If you use a lot of graphics-based programs, especially for video, desktop publishing or multimedia work, 1Mb of Chip RAM may not be enough. You can expand up to 2Mb of Chip RAM inside your A500. Follow the procedure listed for the modification to 1Mb, except do not fit a 8372A Agnus chip. Buy the Meg-A-Chip board (reviewed on page 86 of this issue) and plug this into the Agnus socket. (Beware though, this will prevent you adding other boards inside your Amiga, such as accelerators.)

ALTERING THE FATTER AGNUS CHIP



The semi-circular mark at the top of Agnus' plastic case denotes pin 1. Count anti-clockwise to locate pin 41. Isolate it with a sliver of Sellotape or a dab of Tipp-ex, or bend it up or even remove it altogether.

SPEED TO THE HEART OF THE MATTER

The A500 is a slow machine by today's standards. The Amiga 1200 is between two and five times faster than the original Amiga, and even that is not as fast as it might be.

The Amiga uses the Motorola 68000 family of CPU (Central Processor Unit). The CPU is the chip that does most of the work in your computer. Faster CPUs enable you to use your computer more productively. Tasks that may take hours on slower machines can take minutes, and tedious tasks on slower machines (such as printing from a graphics word processor) are no longer irritating, and in some cases almost instantaneous.

Processor clock speeds are measured in MegaHertz (MHz). This is the frequency of a clock signal that drives the chip. Although the faster the clock frequency the faster the chip operates, higher-spec chips generally run at higher speeds because of design differences, so for example a 14MHz 68020 outperforms a 16MHz 68000 quite considerably in some cases.

There are several versions of the Motorola chip used in Amigas:

- **68000.** This is fitted to the A1000, A500, A500 Plus, A600, A1500, A2000 and CDTV. Running at a rather slow 7MHz, this processor has been the standard fitted to almost every Amiga model since 1985.
- **68020.** This is currently fitted into the Amiga A1200. Running at a more respectable 14MHz, it gives a significant performance benefit over the older generation of Amigas.
- **68030.** This is a faster model of the 68020 chip. Currently a 25MHz '030 chip is fitted to the Amiga 3000 and the Amiga 4000/030
- **68040.** Currently the fastest processor fitted to Amigas, the 25MHz '040 chip may run at the same speed as the 68030 fitted to the Amiga 3000 and 4000/030 but outperforms it considerably by virtue of its better design. The top-of-the-range Amiga 4000/040 and Amiga 4000T are fitted with this processor.

To further complicate matters, there are several models of each processor. The 68020 and above are available in two models, the standard (for example the 68030 in the Amiga 3000) and the EC (68EC030 in the 4000/030). The EC stands for both "Economy" (the EC

versions are cheaper) and "Embedded Controller" – these processors were initially designed for cheap mass-market non-computer use in, for example, industrial control equipment, washing machines and video recorders.

The EC version of the 68020 is limited in the maximum memory it can address – an A1200 with the 68EC020 can only use a maximum of 2Mb Chip RAM and 8Mb Fast RAM. The 68020, non-EC, chip can theoretically address up to 4 GigaBytes, or 4,096 Mb, of RAM.

The EC version of the 68030 does not contain the MMU (Memory Management Unit) present in the full 68030 chip. This is a complex part of the chip that enables the computer to block the processor from accessing areas of memory, or remap a block to point at another area. If this sounds exactly the sort of thing you could do with, then the 4000/030 isn't the machine for you. Luckily for most people there are only a handful of programs that require the presence of an MMU (the developer tool *Enforcer* and the virtual memory program *GigaMem* being the two most important), so unless you need these the EC030 will be as good as the full '030 for you, and will save a few pounds too..

The EC version of the 68040 leaves out both the MMU and the maths coprocessor present in the full '040 chip. Currently Commodore are not using the 68EC040 chip in any of their machines.

Maths coprocessor? What's that? Maths coprocessors are chips which specialise in handling all the complex mathematical functions that slow down normal processors, especially calculations involving not just whole numbers (integers) but fractions. Because these fractions can be accurate to varying numbers of decimal places, maths coprocessors are also referred to as Floating Point Units or FPUs.) FPUs can only be used by programs that have been specially written to take advantage of them, but many packages now support them and run much faster if you have such a chip fitted. These programs include *Art Department Professional, VistaPro, Imagine, Real 3D, Scenery Animator, Morph Plus,* and *Sculpt 4D.* Check that the software you use can benefit from a maths coprocessor before you buy one – otherwise it's wasted money. A maths coprocessor cannot speed up most programs on its own.

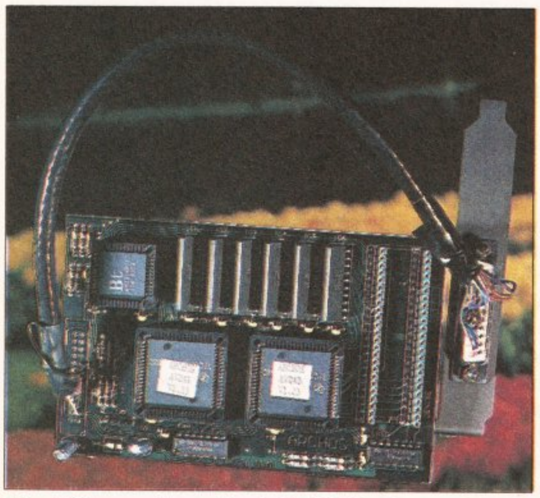


DCTV is another solution to the problem of insufficient colour resolution. It plugs in externally to give a composite video signal with thousands of colours.

The two models of FPU currently available are the 68881 and the 68882, both also made by Motorola. The latter is considerably faster in some functions, but not much faster in others. Choice of maths coprocessor is usually down to budget. If you can afford the 68882 then go for that; if not, the 68881 is quite a bit cheaper. The 68040 chip has a built-in maths coprocessor to take the load off the CPU, so lucky people with Amiga 4000/040s or 68040 accelerator boards do not need to add one.

So, you want a faster processor. How do you fit one? Unfortunately it's not a simple matter of unplugging one chip and adding another. Each chip is different and requires different circuitry to control it. Upgrading processors in the Amiga range requires the installation of an accelerator board. These vary in cost from around £170 to over £2,000, and they're so important an area that we've put together a separate round-up of them starting on page 28.

GRAPHIC DETAILS



The A-Video card provides both 4,096-colour and 16.7-million-colour modes, and has some special animation features too. The latest version will fit externally.

The final area where the A1200 represents an advance over the older Amigas, and by far the most important, is in the graphics display. The Amiga has been limited to a maximum of 32 independent colours chosen from a palette of 4,096 for over seven years. Compared with the PC graphics at the time (CGA, with four colours using one of two fixed palettes, or EGA, with 16 colours from a palette of 64), and the Macintosh (then only black and white), the Amiga was amazing. Unfortunately for Commodore, the competition have caught up. IBM launched VGA in the late 1980s with 256 colours displayable from a palette of 262,112. Macintosh went slightly better with their Mac II colour computers – 256 colours from a palette of 16 million.

Commodore have caught up with the introduction of the AGA graphics chipset. The Amiga 1200 is now capable of displaying 256 colours from a palette of 16 million, and the HAM-8 mode allows photo-realistic images, almost indistinguishable from expensive 24-bit displays, on a standard, £399 Amiga.

Where does this leave the Amiga 500 owner? Can the new AGA chips be fitted to the A500? Unfortunately, no. The AGA chips are far more advanced than the original graphics chips and require a totally different board layout. It's technically next to impossible to produce an add-on to use the AGA chips on an A500 – and if it could be done, it is doubtful that the price would be less than double that of a new A1200.

Now, this doesn't mean you should just go out and sell your A500 right away. There are alternatives.

HiQ Limited supply the *A-Video 24* card (£499), an internal-fitting card that gives the A500 12-bit (4,096-colour) and 24-bit (16-million-colour) displays. The best part of the package they supply is the excellent *TV-Paint* graphics package – what *Deluxe Paint* should be, it's probably the best paint package on the Amiga. The *A-Video* card won't enable you to run AGA software (like *Deluxe Paint AGA),* but if you're using your Amiga for graphics (for example, raytracing), the *A-Video* will perform more than adequately as a display device.

The *DCTV A570* (now £149) is another box that provides the A500 with better-than-normal graphics., Plugging in externally, so it is terribly simple to set up, it gives the A500 a composite video display in over four million colours. The box is ideal for simple video work, because the composite output needs no encoding to connect straight to standard video recorders. Also provided as part of the *DCTV* hardware is a frame grabber, which can digitise a colour video image. You can import this straight into the excellent *DCTV* paint program supplied, mess around with it and display it back as video. Again, *DCTV* won't run new AGA software and you can't have fancy Workbench backgrounds, but for a practical solution for a common use of the Amiga, *DCTV* is a solid performer.

If all you're after is a flicker-free high-resolution display, then there are two ways you can reduce the flicker, although both require an expensive multisync monitor (like the Commodore 1960) to work.

First, the A500 Plus introduced a new chip, the Super Denise (8373) to replace the original Denise video chip. This gives your machine several new display modes, including "Productivity", which can give a flicker-free 640 x 480 resolution display on an Amiga connected to a multisync. This chip will work on any Amiga that has the Fatter 8372A or 8375 Agnus fitted, and adding it in is easy – simply remove the old Denise chip and insert the new chip.

Only software written to take advantage of different screen modes, or programs that run on the Workbench screen, will run flicker-free, but it's sure better than nothing.

If you want to fix the flicker permanently, you need the ICD *Flicker Free Video 2* card. This plugs into the Denise socket and contains extra circuitry and RAM to remove the interlace flicker from any screen mode, although again this requires a multisync monitor to work.

Or, for £399 or less, you can buy a hardware frame buffer that will enable you to display all the new AGA modes (including HAM8), flicker free on a multisync. It will run *Deluxe Paint AGA,* and even has its own floppy drive, 68020 processor and mouse. Yes, it's an Amiga 1200 – a bargain in anyone's language. Whether you buy one or upgrade your A500 will depend largely on whether or not you have many A500 peripherals you want to keep. But at least now you know how to upgrade should you choose to. AS

• Accelerators round-up, page 28.

WHERE TO GET IT

- 8372 Agnus, Super Denise and other chip spares (£various) CPC Components ☎ 0772 555034
- ICD Flicker Free Video 2 (£199) Omega Projects ☎ 0942 682206
- DCTV A570 (£149) Silica Systems ☎ 081 309 1111
- A-Video 24 (£499) HiQ ☎ 081 909 2092.

The thrill of speed

Toby Simpson tests the single upgrade that improves every aspect of your Amiga, from display to data handling.

What can an accelerator do for you? Just imagine: no more waiting for those "Wait" balloons to disappear, no more watching screen updates at the speed of trickling molasses, no more wondering whether your machine has crashed because nothing seems to be happening. Just imagine desktop publishing that really is faster than setting type by hand, animation that redraws fast enough to look like it's actually moving, and ray-tracing that you don't have to wait a week to see.

Your Amiga is a powerful machine, and it's capable of processing well over half a million instructions every second, but processor-intensive applications like these can push it to its limits. No matter how straightforward or how sophisticated the program you're running, the machine simply cannot run faster than the "clock speed" of its Central Processing Unit (CPU). The obvious solution: upgrade the CPU, increase its clock speed, or both. And the way to do that is to add an accelerator card.

Accelerators are a major investment. As we noted in our overview in *Amiga Shopper* 20, an accelerator card is likely to be your most expensive add-on after a hard disk. (If you missed that issue's introduction to accelerators and reviews of other cards not covered here, turn to the *Amiga Shopper* back issues service on page 116.) However, a lot has changed in the last six months, apart from the addition of the A1200 to the Amiga range. Most importantly, the price of some of the much faster 68040-based accelerators has come down, meaning that it is now possible for even A500 owners to consider putting a high-speed 68040 card into their machine.

If you're starting from scratch, with a 7.14MHz 68000 as fitted in the A500, A500 Plus, A1500 and A2000, there's a huge range of options available. If you are an A3000 owner, then you only have one practical choice, and that is specific A3000 cards – all currently 68040-based. The range and value-for-money of these cards is getting better by the day, so it's worth shopping around. For A1200 owners, the choice is not quite as wide yet. You already have a 14MHz 68020 chip in your machine as it is. If you decide you need further speed, a few boards are already available and the options are increasing almost month

BEGINNERS START HERE

Most Amigas have a Motorola 68000 chip in them (but see page 20 for the exceptions), able to handle over half a million single instructions per second or half a MIP. That's fast enough to add all the numbers from 1 to 5,000,000 inclusive together in less than half a minute. (Try it yourself and see how long it takes you!) A 68030 can do it in three seconds. The Amiga 4000/040, which can deliver about 20 MIPS, can do it in a second and a half. Some of the most advanced processors available, such as the Dec Alpha, can execute 100 million instructions per second. This sort of blindingly-fast Supercomputer-level performance will soon find its way into desktop machines – and in the case of the Dec Alpha, it already has. Dec have produced a version of the IBM PC with their Alpha chip in. Believe me, this does not hang about. If only we could get one of these beasts into an Amiga...

Although chips are becoming very fast, memory has been finding it hard to keep up, and the bottleneck in some modern computers is not the CPU chip, but how fast main memory can operate. It was getting to the point where the processor would have to sit idle, waiting for the memory to come up with the results. These forced delays are called "wait states".

One way of easing this problem is to use a "cache" (pronounced "cash"). This is a small amount of extremely fast memory that is on-board the CPU chip itself. The chip is able to read and write information to the cache much faster than main memory, and fetch one instruction while it is still executing the previous one. By holding the past few instructions in the cache, the CPU can execute small program loops entirely in the cache, making them blindingly fast. On chips like the 68030, the cache controllers "pre-fetch" both instructions and data, so they sit ready in the cache for the CPU to use. So, why isn't all your memory cache memory if it's so fast? Quite simply, the faster the memory the more expensive it is. Cache RAM is generally too costly for desktop machines.

SCORING SPEED: THE REVIEWS

Accelerators are tough to rate – it's very much a matter of horses for courses. We've looked at general considerations, such as the supplied documentation, software, and ease of fitting, but you should try to get a clear idea of your specific needs and not rely only on the ratings.

We have given comparison figures for speed, but be aware that few processor speed programs are totally accurate – we found that three MIPS programs rated an A4000 at anywhere from 14MIPS to 21MIPS! Such variations should balance out across the range of tests we carried out, but bear in mind that there is bound to be a margin of error and figures that are close to one another can't be definitive. For these reasons, we have rated these cards in relation to each other, but not by measures that pretend to be absolute.

Terms such as **FPU** and **MMU** are explained in the main body text.

These are the cards reviewed:

For the A500:
- GVP A530 – 68EC030 @ 40MHz, with high-speed SCSI interface and 1Mb RAM
- Progressive Peripherals 040-500 – 68040 @ 33MHz, with 6Mb RAM

For A1500s and A2000s:
- GVP G-Force 030 – 68EC030 @ 40MHz, with 68882 FPU and 4Mb RAM
- GVP G-Force 040 – 68040 @ 33MHz, with SCSI and 16Mb RAM
- Progressive Peripherals Zeus 040 – 68040 @ 33MHz, with SCSI and 16Mb RAM

For the A3000/A3000T:
- GVP G-Force 040 – 68040 @ 28MHz, with 2Mb RAM
- Progressive Peripherals Mercury 040 – 68040 @ 35MHz, with 16Mb RAM

For the A1200:
- GVP A1230 – 68EC030 @ 40MHz, with 4Mb RAM and FPU

A NOTE ABOUT RAM

Some of these cards (all of GVP's) can accept SIMM (Single In-line Memory Module) RAM modules (about £60 for 1Mb), up to a total of 8Mb in all. This means that if your budget is tight you could buy a basic accelerator and add RAM later as you needed it, saving on the initial outlay.

by month. A4000 owners don't have a choice at all, just yet, but the word is that you can expect to see some accelerator cards for the A4000/030 coming out shortly.

TEN QUESTIONS

Before you plunge in and splash out on an accelerator card, Jolyon Ralph and Toby Simpson suggest you ask yourself these questions.

1 Will it do me any good?
Not all software will work with an accelerator. Some software, particularly games, will appear to be no different in speed. Usually this isn't a bad thing – after all, you don't want to play games that are uncontrollable. Other programs – again, some older games in particular – may not work at all,

GVP A530

For the A500. 68EC030 @ 40MHz, with high-speed SCSI interface and hard disk and 1Mb RAM

This is a neat add-on for the A500. It plugs into the left hand side expansion port and gives you a stylish 42Mb or 120Mb SCSI hard disk, 1Mb of 32-bit RAM (expandable to 8Mb) and a 40MHz 68EC030 chip, with optional 40MHz 68882 FPU.

FITTING

As easy as pie. It's another GVP plug-in-and-go product, and you do just that.

IN USE

Transparent. You don't have to worry about complex set-ups – the RAM and processor are automatically recognised by your A500, as is the hard disk. GVP supply their excellent hard disk preparation and partitioning software, which, although it looks a little daunting at first, is in fact very easy to use. Documentation is excellent. The "game" switch on the front is a nice touch – it disables the 68030 processor so you can run slower software. Unfortunately it also disables the RAM.

OVERALL IMPRESSION

This is a very easy expansion to the A500 computer, making it a fast and powerful machine. What it does not do, however, is give you AGA performance, faster graphics. If you're going to be expanding your A500 to this extent, you want to think very carefully about whether an A1200 would be a better buy in the long term. If you do want to expand your A500, however, this is ideal. If you already have a lot of A500 hardware and don't want the AGA, this is a good way to go.

FEATURES

Fitting: 9/10
Software: 8/10



Documentation: 9/10
Minimum hardware requirements: A500, with empty side expansion slot.
MMU: No.
FPU: Optional.
Hard disk interface: Yes, SCSI, with hard disk
Price: £699 with 1Mb RAM + 42Mb hard disk
£899 with 1Mb RAM + 120Mb hard disk
OVERALL: 8/10

Manufactured by: Great Valley Products ☎ 0101 215 337 8770
Distributed by: Silica Systems ☎ 081 309 1111

PROGRESSIVE PERIPHERALS 040-500

For the A500/A500 Plus. 68040 @ 33MHz, with 6Mb of 32-bit RAM

This 33MHz 68040 expansion card for the A500 comes with 6Mb of 32-bit RAM as standard, and it gives you some serious power to boost the A500. It fits internally and does not take up any expansion slots.

FITTING

Requires a lot of heartache to install, and could potentially age you 50 years. You'll also invalidate your warranty, and you can easily cause some serious damage. When fitting this sort of card, *read the manual in detail* before starting. You really don't want to get this wrong!

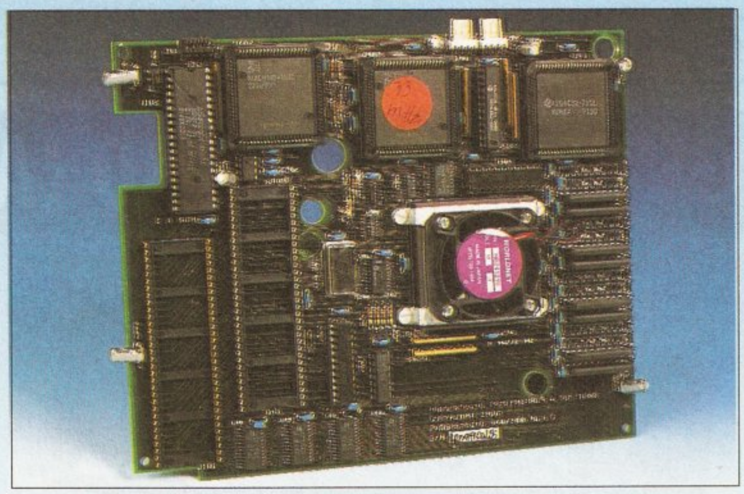
You have to remove the 68000 chip and re-seat it on to the 040 card. Then you fit a socket extension to the 040 card and insert this into the 68000 socket.

IN USE

This is quite a large board, and runs quite warm. Because the 68040 chip requires 2.04 ROMs to work, Progressive have cleverly put these on to their board as standard, which saves you having to buy new ROMs. Of course, if you already have them, this is a bit of a waste. The supplied software enables you to boot off your old processor and ROMs, which gives you excellent compatibility with games and other software which refuses to run on the 040 or under 2.04. This board acts as a ROM switcher as well as a processor accelerator! Unfortunately, RAM is not on SIMMs and not socketed, so it would be difficult to expand the memory of this board any further.

OVERALL IMPRESSION

What can I say? You can't really make an A500 go any faster than this. The question is, do you really want to do it? If you can afford one of these, you can afford an A4000/030, which is AGA-based and future-proof. If you've got this sort of money, maybe now is the time to upgrade your machine. If you want to keep your A500, you can't beat this for speed, although installation is a bit of a nightmare.



FEATURES

Fitting: 5/10
Software: 8/10
Documentation: 8/10
Minimum hardware requirements: A500, with no Gary towers or internal gadgets.
MMU: Yes
FPU: Yes
Hard disk interface: No
Price: £1,099
OVERALL: 6/10

Manufactured by: Progressive Peripherals ☎ 0101 303 238 5555
Distributed by: Micro-PACE UK ☎ 0753 551888

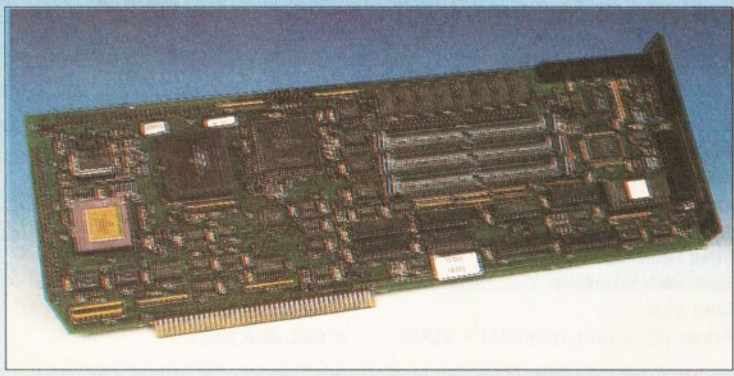
though nowadays this is the exception rather than the rule. As an *Amiga Shopper* reader, you may not be too concerned about games, and the good news is that probably 99% of new Amiga software, and virtually all the serious software available for the machine, will work with an accelerator.

❷ Do I already have a hard disk?
Some cards have hard disks on board with special high-speed interfaces – the G-Force cards from GVP have an extremely quick SCSI interface indeed. The one we tested managed about 2Mb per second peak performance using a disk speed program, whereas a standard A3000 peaked at 1.4Mb per second. If you are getting an accelerator card for general use, then you might like to think about a compatible hard drive as well. An ideal solution if you have neither a hard disk nor an accelerator already is to get both at once with one of the dual cards.

❸ Am I using a DMA interface?
Because Direct Memory Access devices send data straight into memory, they in effect bypass the processor your accelerator would be accelerating. If your hard disk controller is not a DMA type, you have no problem, but DMA controllers such as the Commodore A590 hard disk interface will not work properly with most A500 accelerators. If you have the A590 then you are currently limited to only one accelerator, the Microbotics VXL-030 (£274.99, reviewed in *Amiga Shopper* 20). Solid State Leisure claim to be working on a software patch to allow their A5000 and B5000 cards to work properly with the A590, but this isn't yet available. Currently this problem can slow down the A590 by as much as 75%. Again, this occurs only with DMA controllers and does not apply to most other hard disk controllers, such as the GVP. If in doubt, check with the supplier of your hard disk or the manufacturer of the accelerator card you are considering.

❹ Do I need an FPU?
A Floating Point Unit or maths co-processor is a hardware goodie that bolts on to the CPU to give extremely fast processing of "floating point" maths – that is, calculations involving lots of fractions rather than just whole numbers. What exactly uses floating point maths? Well, if you are a desktop publisher or a user of programs such as *Real 3D, Imagine, Vista, Sculpt 4D, ProDraw* and *Art Department Pro,* then you are someone who could really make use of the FPU. The speed comparison graphs on page 37 show the speed advantage of floating point maths with an FPU clearly. There are two FPUs, the 68882 (which came out

GVP G-FORCE 030



For the A1500 or A2000. 68EC030 @ 40MHz, with 40MHz 68882 FPU, SCSI interface and 4Mb RAM

This is basically the GVP A530 card (see page 29), but for the A1500 or A2000 computers rather than the A500. This card doesn't take up any of the conventional expansion slots – instead, it sits in the processor expansion and gives you fast SCSI and 4Mb of 32-bit RAM. The unit tested had a 40MHz 68882 FPU fitted also.

FITTING
Installing this requires no soldering or complex fitting, fortunately. Take the case off your Amiga, insert the board, attach the 25-pin external SCSI connector to a Zorro backplane so that you can plug devices into the back, and away you go. The board can take a hard disk on board if you have one.

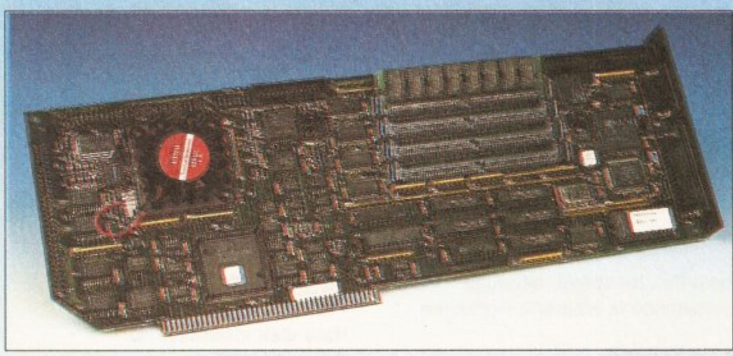
IN USE
Nice. Functionally identical to the A530 in operation, and has all the same features. This one had the 40MHz 68882, and this made rendering operations very fast indeed. GVP's excellent hard disk installation software is supplied.

OVERALL IMPRESSION
A practical, good value-for-money general expansion for the A1500 or A2000 computers. If you're not upgrading to the A4000, then this is ideal.

FEATURES
Fitting: 8/10
Software: 9/10
Documentation: 9/10
Minimum hardware requirements: A1500 or A2000 with empty CPU expansion port
MMU: No
FPU: Yes
Hard disk interface: Yes, SCSI
Price: £699
OVERALL: 8/10

Manufactured by: Great Valley Products ☎ 0101 215 337 8770
Distributed by: Silica Systems ☎ 081 309 1111

GVP G-FORCE 040 (A1500/A2000)



For the A1500 or A2000. 68040 @ 33MHz, with SCSI interface and 16Mb RAM

This is like the G-Force 030 card reviewed immediately above, but it contains a much faster 68040 chip (clocked at 33MHz, but this runs faster than the 40MHz '030 in the card above) and 16Mb of fast 32-bit RAM. There is a fast on-board SCSI interface.

FITTING
As in the case of the other A1500/A2000 cards, fitting this is a simple procedure if the instructions are carefully followed.

IN USE
Works without any problems and produces an impressive turn of speed, although we felt that the Progressive Peripherals Zeus board was slightly faster.

OVERALL IMPRESSION
A fast, easy-to-use 68040 board that benefits from GVP's excellent software. This is a good buy at the price, though if you have this much to spend you might again be thinking of trading in your machine.

FEATURES
Fitting: 8/10
Software: 9/10
Documentation: 9/10
Minimum hardware requirements: A1500/A2000 with empty CPU expansion port.
MMU: Yes
FPU: Yes
Hard disk interface: Yes, SCSI
Price: £1,299
OVERALL:8/10

Manufactured by: Great Valley Products ☎ 0101 215 337 8770
Distributed by: Silica Systems ☎ 081 309 1111

primarily to accompany the 68030) and the 68881 (which is what comes with most 68020 boards that include an FPU).

❺ Do I need an MMU?
A Memory Management Unit is a clever little device that enables your Amiga to make use of virtual memory and memory protection. Virtual memory increases the amount of free RAM you have by setting aside part of your hard disk and fooling the CPU into thinking it is real RAM. This virtual RAM is considerably slower than the real thing, but it can come in handy if you desperately need more memory and is one way of overcoming the Amiga's normal 10Mb memory ceiling – but then an accelerator card can do that anyway because it can access its own memory. Memory protection allows the CPU in a multi-tasking environment to stop one task taking out other tasks when it goes wrong by preventing it from writing to memory that it does not own. The Amiga currently supports neither memory protection nor virtual memory, so what is the point of having an MMU? If you are a programmer, or are thinking of taking up programming seriously, especially in C or assembly language, then an MMU allows you to run some pretty neat debugging tools, such as Commodore's *Enforcer. Enforcer* jumps in when your program screws up and tells you what it did and where it went wrong. Believe me, if you are thinking of purchasing that new C compiler or looking enviously at *DevPac 3*, then you ought to be drooling over the possibilities of having an MMU.

❻ Do I need 32-bit RAM?
The 68000 chip (used in the Amiga 500, 600, 1000, 1500 and 2000) is a 16-bit processor – that is, it can access 16 bits of memory at once. The 68020 and above are 32-bit processors – which means they are capable of running twice as fast as a

continued on page 36

PROGRESSIVE PERIPHERALS ZEUS 040

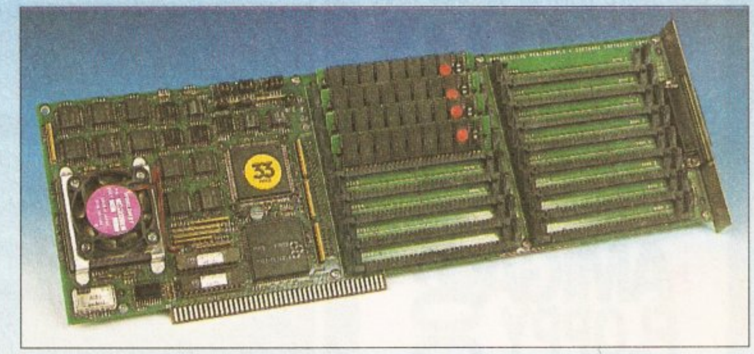
For the A1500 or A2000. 68040 @ 33MHz, with SCSI and 16Mb of 32-bit RAM

This is a 68040 expansion card for the A1500 and A2000 series computers. It gives 16Mb of fast 32-bit RAM, a 33MHz 68040 chip and a fast SCSI interface.

FITTING
Like the GVP G-Force, this is a case of plug in and go. Installing this card is a straightforward procedure.

IN USE
This board is very impressive indeed. It has worked faultlessly since the first time it was switched on a month or so ago now, in a development environment. We're pretty upset to see this one go! The hard disk performance is blisteringly fast and it really does make the A2000 move. Software is excellent.

OVERALL IMPRESSION
A good buy if you are intending on keeping your A1500/A2000 for a while. The hard disk performance has to be experienced!



FEATURES
Fitting: 8/10
Software: 9/10
Documentation: 8/10
Minimum hardware requirements: A1500/A2000 with free CPU slot.
MMU: Yes
FPU: Yes
Hard disk interface: Yes, SCSI
Price: £2,099 with 16Mb RAM, £1,199 without RAM fitted

OVERALL: 8/10
Manufactured by: Progressive Peripherals ☎ 0101 303 238 5555
Distributed by: Micro-PACE UK ☎ 0753 551888

GVP G-FORCE 040 (A3000/A3000T)

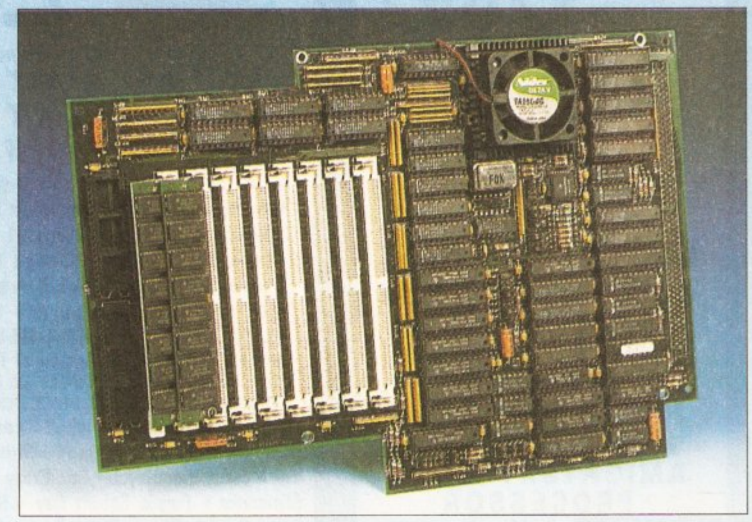
For the A3000/A3000T. 68040 @ 28MHz, with 2Mb RAM

This is a rather neat 28MHz 68040 expansion for the A3000 or A3000T. It can have up to 8Mb of ultra-fast 40nS 32-bit RAM fitted in the form of SIMMs. This has a fan on the 040, as with the other 040 cards. It comes complete with the 2.04 Kickstart 2 ROMs for the A3000, in case your machine does not have them already.

FITTING
You really have to take your machine to bits. Replacing the ROMs is a pain if you have to do that as well. Fitting the connector for the fan is fairly simple – it plugs into one of the hard disk power sockets and offers a through connector, and this means you don't require any special leads for the A3000T version. Unfortunately, on my A3000T some adjustments to the PCB had to be made, including the removal of a resistor. Fitting this is not for the faint-hearted, and should really be done by a trained fitter or your dealer.

IN USE
Once the card is fitted, the normal collection of excellent GVP utilities make this board easy to use. It's fast, but only just faster than the A4000/040. Software is supplied to speed up your Kickstart by copying it to RAM, and to fall back to the original 68030 chip inside your Amiga if you need to do so.

OVERALL IMPRESSION
Nice board, but a real tough cookie to install. Unfortunately I've yet to see *any* A3000 expansion that is simply plug-in-and-go, so I guess this is about as good as you're going to get. The rumour is that this board is likely to be superseded soon, so the price may well be coming down.



FEATURES
Fitting: 6/10
Software: 8/10
Documentation: 9/10
Minimum hardware requirements: A3000 or A3000T with empty processor expansion port.
MMU: Yes
FPU: Yes
Hard disk interface: No

Price: £1,499

OVERALL: 8/10

Manufactured by: Great Valley Products ☎ 0101 215 337 8770
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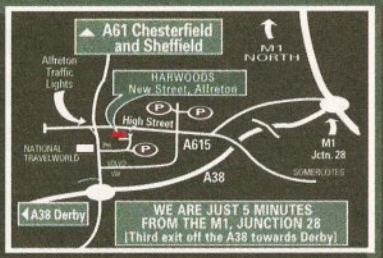
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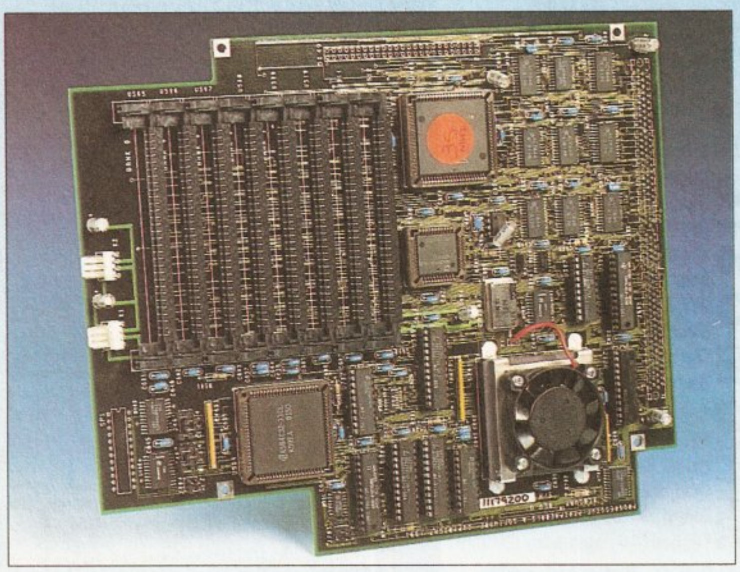
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continued from page 31

16-bit processor. It also means that when you add an accelerator board (which amounts to replacing your 16-bit chip with a 32-bit one), you need 32-bit RAM to keep up wit it. (The actual RAM chips are no different from other RAM chips, but they are arranged differently on the board.) Without 32-bit RAM your accelerator is crippled, and in some cases an accelerator without 32-bit RAM can actually run slower than a standard Amiga. Most Amiga accelerators can take 32-bit RAM expansion. You *cannot* convert existing RAM to 32

PROGRESSIVE PERIPHERALS MERCURY 040



For the A3000/A3000T. 68040 @ 35MHz, with 16Mb RAM

This is the ultimate in luxury expansions for the A3000 or A3000T. A rather large card, it fits into the special processor expansion port and gives you 35 (yes, *thirty*-five) MHz of raw 68040 processing power. This, coupled with 16Mb of very fast 32-bit RAM, makes an attractive package.

FITTING

Installation of this card is a little complicated, depending on the machine you're fitting it into – the A3000T is slightly harder than the A3000. You have to take not only the case but just about everything else to bits in order to fit it in. Because the '040 is being run faster than its recommended speed (35MHz rather than 33), it's just as well that a fan is fitted (as on the other 040 boards reviewed here) and to wire it up you need the little adaptor supplied. This plugs into the disk drive power, and you will need an extender if you have an A3000T. You require Kickstart 2.04 to fit this, but it is not supplied.

IN USE

Blindingly fast in all operations. I was slightly worried about the way the board sits in the machine – it is so big and covers a large area of PCB, including areas where RAM chips and other warm chips sit. This, and the general weight of the board, make it a bit worrying. On top of that, even with the fan, I was nervous that a 33MHz chip was clocked at 35MHz, and kept thinking something was about to go wrong – but I must stress that nothing did. It's easy to use, and the software is easy to install.

OVERALL IMPRESSION

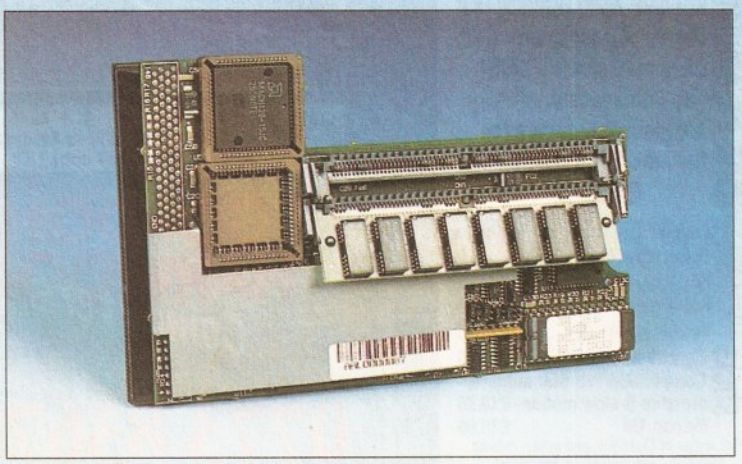
This is a speedy board, no doubts about it. The 32-bit RAM does not hang around, and this is the fastest 040 I have ever seen. My only quibbles are that the board seemed to fit uncomfortably in my machine, and everything got a tad warm over time, though with no apparent ill effects. Installation in an A3000T is a right pain, but if you need the processing power, this is worth it.

FEATURES

Fitting: 6/10 (A3000T)
Software: 8/10
Documentation: 8/10
Minimum hardware requirements: A3000 or A3000T with Kickstart 2.04 in ROM.
MMU: Yes
FPU: Yes
Hard disk interface: No
Price: £2,099 with 16Mb of RAM, £1,199 with no RAM fitted
OVERALL: 8/10

Manufactured by: Progressive Peripherals ☎ 0101 303 238 5555
Distributed by: Micro-PACE UK ☎ 0753 551888

GVP A1230



For the A1200. 68EC030 @ 40MHz, with 4Mb RAM and FPU

This is one of the first accelerators available for the A1200. It comes with a 40MHz 68EC030 chip, a socket for a 40MHz 68882 FPU, and 4Mb of RAM, expandable to a massive 32Mb, all nice fast 32-bit RAM. It all comes in so compact a box that you wonder how on earth they packed it in.

FITTING

Fitting this is a breeze. The documentation is excellent. Simply unplug your A1200, turn it upside down, remove the trapdoor and slot the card in. It does require a little thinking about how you are going to get the card through the hole, because it's actually larger than the trapdoor, but the manual very helpfully describes how to do it, and it can be done.

IN USE

Using this card is even more of a breeze than fitting it. Software installation is nil. This is literally plug in and go: the 68030 and RAM are automatically detected by the A1200 and used. You might as well not bother with the supplied disk – you don't need it. It includes a couple of basic utilities for testing memory, controlling your 68030 chip, and examining various parts of your computer.

OVERALL IMPRESSION

This is a real winner. It couldn't be simpler to fit (well, all right, it could, if it were a bit smaller or the trapdoor were a bit bigger), it takes no setting up to get going and it works just fine. It turns the A1200 into a really serious productivity tool, and represents excellent value for money.

FEATURES

Fitting: 9/10
Software: 9/10
Documentation: 9/10
Minimum hardware requirements: A1200 with an empty trap-door slot
MMU: No
FPU: Optional, 40MHz 68882
Hard disk interface: No
Price: £299 with no RAM or FPU, £599 with 4Mb RAM and FPU
OVERALL: 9/10

Manufactured by: Great Valley Products ☎ 0101 215 337 8770
Distributed by: Silica Systems ☎ 081 309 1111

bits. Your Chip RAM, for example, will always be 16 bits, as will any trapdoor RAM added by A500 or A600 owners. The A1200 and A4000 ('030 and '040 versions) are a major step forward in Amiga technology because they are 32 bits throughout – there is not a single byte of 16-bit RAM anywhere. If you're accelerating any other Amigas, make sure you budget for some 32-bit RAM when planning to buy a card.

7 Will it fit in my machine?
Check the design and overall size of the card. The 68000 socket was not designed to bear the weight of heavy cards and after several months' use of an accelerator in my A500 Plus, I have had many problems caused by my accelerator (the Microbotics VXL-030) popping out of the socket, probably thanks to the combined weight of the VXL-030 card and the associated RAM-32 card. I have recently tried out the CSA Derringer '030 card in place of the Microbotics card, which is smaller, looks better built, and appears so far to be more reliable.

If you have other boards plugged into the area around the accelerator (for example, ROM switchers, *Meg-A-Chip, ICD Flicker Free Video* or *AdIDE)* then you will have to remove them or your accelerator will not fit.

And a warning for A500 Plus owners. On some models there is a large blue capacitor about three inches directly below the power connector (marked C307). If the capacitor is about the same height as the two capacitors immediately behind the power connector (about three-eighths of an inch high) and cannot be bent over to allow greater clearance, then it will clash with several of the accelerator boards present. On my A500 Plus I had to de-solder this capacitor and re-solder it at an angle to fit my accelerator board.

8 Can I fit it myself?
Almost all Amiga 500 accelerators fit easily inside the A500. (But see question 7 above for a note about the A500 Plus.) They require the removal of the 68000 chip (the largest rectangular chip on the board, on the left hand side). All you have to do is open up your machine (see pages 20 to 26 for details) and gently prise the chip out of the socket and the board will plug back into the socket. Some boards require you to plug the 68000 chip back into a new socket for it on the accelerator board afterwards.

Remember that if your machine is still under warranty, opening it up may invalidate the warranty, so if anything goes wrong you're on your own. (See Talking Shop, page 92.)

If that or the thought of opening your machine up is too much for you, and particularly if you haven't already got a hard disk but would like one, you could do worse than look at the A530 hard disk/accelerator from GVP – just plug it into the side of your 500 or 500 Plus, and it works. No messing with 68000 chips, no de-soldering capacitors.

9 What about the cost?
You get what you pay for. If you have less than £150 to spend, it's probably best not to bother. The best-value accelerator you can get for this sort of money costs around £12 and is a drop-in replacement for the 68000 chip: a 68010. This will give a very small, but still noticeable, speed increase. The modification should be done by a qualified dealer – otherwise you could both invalidate your warranty and cause expensive damage to your Amiga. This is useless for A3000, A4000 and A1200 owners, however, who already have a higher-spec processors. The accelerator cards reviewed here range in price from under £300 to over £2,000.

10 Should I just get a new Amiga?
This is a serious question. If you are thinking about accelerating your A500, A1500, A2000 or A3000, you might like to think twice and then again. If you're going to be spending £1,500 or more anyway, it might be cheaper and better in the long term to simply sell your machine and upgrade to a newer, AGA-based Amiga such as the A1200 (starting at just £399) or A4000 (about £2,000 or so). Both of these machines are 32-bit throughout and offer excellent future expandability. It is likely that over the coming year, more and more software will require lots of RAM, greater processing speeds and better graphics. It might be best to get yourself set up for the future now, and save a whole load of heartache later. AS

JARGON BUSTING

CMOS – Complimentary Metal Oxide Semiconductor. A type of chip that requires very little power to run on. Originally CMOS chips were very slow in comparison to other chip types such as NMOS, so weren't used so much in computers. These days they are lightning fast, but still require a fraction of the power. This makes them ideal for portable computers – but there's no Amiga Portable because the old chipset and ECS were NMOS chips. The new AGA (AA) chipset in the A4000 is now CMOS, so fingers crossed...

DMA – Direct Memory Access. A process where external hardware, such as a hard disk controller, is able to put data directly into the computer's main memory without the need for a program to transfer the information. This makes for very fast data manipulation indeed.

Linear Address Space – The maximum amount of physical RAM that the CPU can "see" at any one time. A 68000 chip can see up to 16Mb of memory. The 68020 and above can see up to 4 Gigabytes – that is, 4,096Mb – at once.

MIPS – Millions of Instructions Per Second. Represents how many single machine code instructions a processor can execute in one second. A standard Amiga executes under 1MIP. An A4000 will manage around 19 to 20 MIPS.

MFLOPS – Millions of Floating Point Instructions Per Second. A benchmark, rather like MIPS, but refers to "floating point" maths instructions.

NMOS – Negative Metal Oxide Semiconductor. A type of chip requiring more power to run than CMOS.

SIMMs – Single In-line Memory Modules. These simply plug into a special socket on your circuit board – much easier than chips to install.

SPEED TRIALS: THE RESULTS

These tables set out comparative speeds for the accelerator cards reviewed, against the benchmark of a standard A500 and other unaccelerated Amigas. We carried out a number of tests, using standard utilities such as *AIBB*, and a couple of real-life operations, including a *Vista* frame and some processor-intensive DTP operations. For each configuration we then averaged the times taken for integer operations and those for "floating point" operations. In these tables, the performance of each card is given as **the number of times it is faster than a standard A500** – the higher the figure, the faster the result.

For floating point tests, some of the results seem low. These are for machines without an FPU or maths coprocessor present. In such cases, floating point calculations are carried out in software instead, which is a slower process.

INTEGER

A500 Standard	1
A4000 '030	19.18
A4000 '040	41.60
A1200, Standard	8.31
A500 with GVP A530	28.27
A500 with PP 040-500	55.05
A2000 with GVP G-Force 030	28.36
A2000 with GVP G-Force 040	53.48
A2000 with PP Zeus 040	54.73
A3000 with GVP G-Force 040	20.52
A3000 with PP Mercury 040	58.49
A1200 with GVP A1230	28.71

FLOATING POINT

A500 Standard	1
A4000 '030	4.81
A4000 '040	214.61
A1200, Standard	1.67
A500 with GVP A530	7.12
A500 with PP 040-500	262.30
A2000 with GVP G-Force 030	37.67
A2000 with GVP G-Force 040	262.30
A2000 with PP Zeus 040	283.28
A3000 with GVP G-Force 040	236.07
A3000 with PP Mercury 040	337.24
A1200 with GVP A1230*	7.23

*Tested without FPU

• *AIBB* or *Amiga Intuition-Based Benchmark* is a public domain program that tests various aspects of an Amiga's system and performance, then compares this graphically with other standard Amigas. It is available from PD Soft (☎ 0702 466933) on disk V948 and was reviewed in *Amiga Shopper* 25 – if you missed that issue, you can order a copy on page 116.

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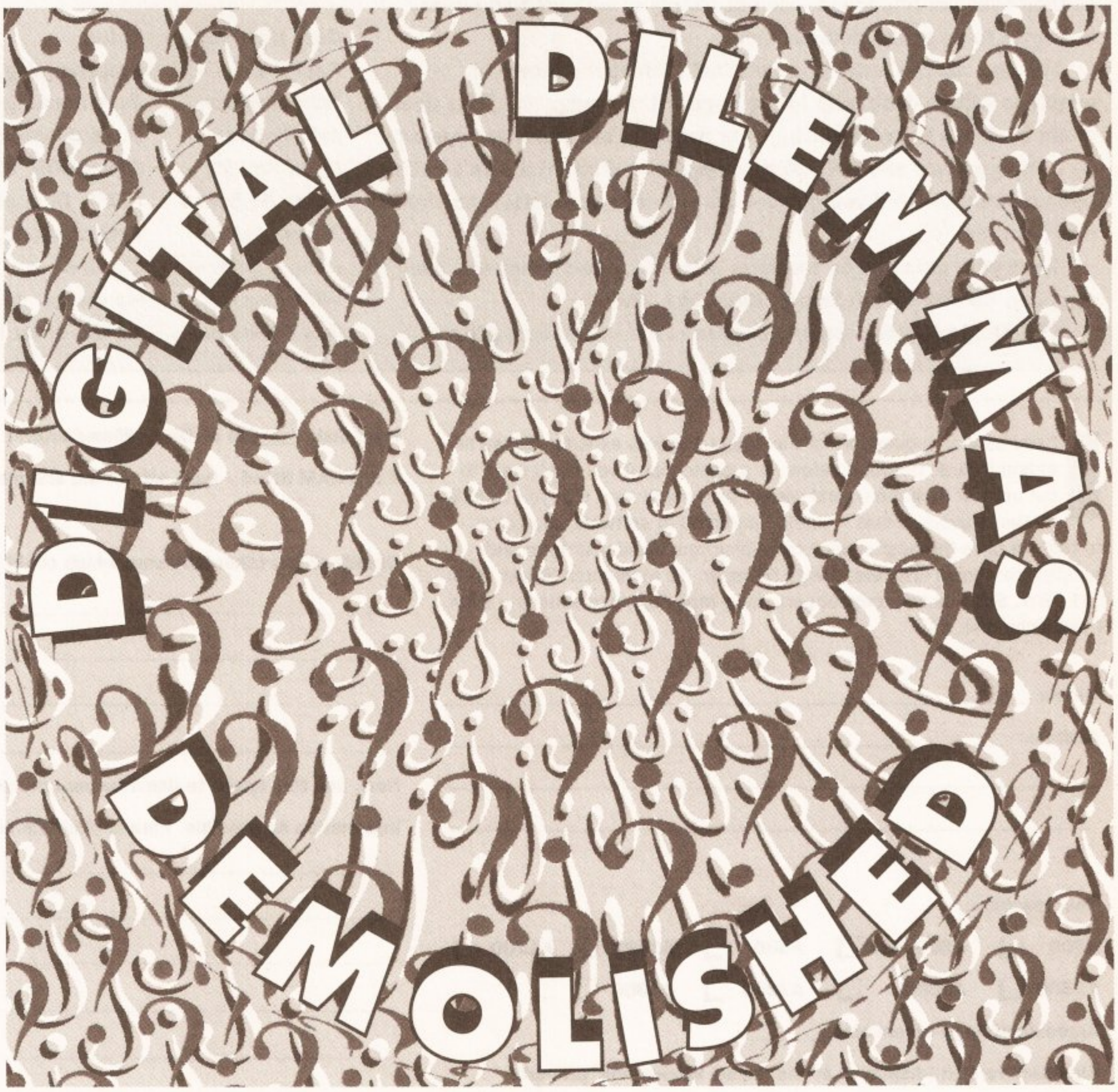
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Caution: be sure that you fully understand the answer before trying it out.


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Your machine:

A500 ☐ **A500 Plus** ☐ **A600** ☐ **A1000** ☐ **A1200** ☐

A1500 ☐ **A2000** ☐ **A3000** ☐ **A4000** ☐

Approximate age of machine: ________

Kickstart version (displayed at the 'insert Workbench' prompt)

1.2 ☐ **1.3** ☐ **2.x** ☐

Workbench revision (written on the Workbench disk)

1.2 ☐ **1.3** ☐ **1.3.2** ☐ **2.x** ☐ **3.0** ☐

PCB revision (if known). Do not take your machine apart just to look for this! ________

Total memory fitted (see AVAIL in Shell for 1.3 Workbench) ________

Chip memory available (see AVAIL in Shell) ________

Agnus chip (if known) ________

Extra drive #1 (3.5"/5.25") as DF__: Manufacturer ________

Extra drive #2 (3.5"/5.25") as DF__: Manufacturer ________

Hard disk: ____Mb as DH__: Manufacturer ________

Extra RAM fitted – type, size in Mb and manufacturer ________

Details of any other hardware which could help us to answer your question:

____

____

____

____

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

____

AS 27

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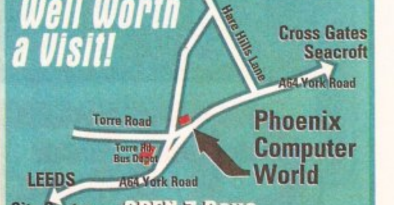
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It's our use of a wide variety of experts to tackle your queries that makes the Answers pages as vibrant and informative as they are – and we've got lots of ideas that we'll continue to introduce over the next few months to make sure that Amiga Answers stays the most exciting and readable problem-solving section of any Amiga magazine. You ain't seen nothing yet!

Gus Chandler

Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

EXTRA LARGE PORTION



What chips and/or modifications are necessary to upgrade my Amiga 500 (revision 5) to 1Mb Chip memory? Are any other chips (other than the ROM) necessary to make the machine run Workbench 2.0?
Andy Newell
Reading
Berks

Assuming that you have a normal 512K trapdoor expansion you need to do the following:

Purchase an 8372A Agnus Chip, and if necessary a PLCC chip extractor. Locate pin 41 on the Agnus chip (the Agnus diagram in the back of the Amiga 500 manual will help here) and insulate the pin to prevent contact with the socket. This is to force the Agnus chip into PAL mode. Pull out the old Agnus chip carefully, preferably with a PLCC extractor, because it is very easy to break the Agnus socket, which is difficult and expensive to replace. Plug the new Agnus chip in its place and power on.

If all is well you should have a working Amiga, but still only 0.5Mb of Chip RAM.

Find JP2 on the motherboard, which consists of three jumper pads. Cut the two that are connected and solder a link between the other two.

Find Pin 32 on the Gary chip and follow it down the board until it reaches the Edge Connector. Cut it as near to the Edge Connector as you can. Turn on your Amiga and you should have 1Mb of Chip RAM. For more on upgrading, see this issue's main feature, starting page 20. ***JR***

NOT ALL AT ONCE



I have an A500 Plus with a 1Mb RAM expansion fitted to the machine's trapdoor connector to give a total of 2Mb of RAM. I wish to buy a PC emulator/bridgeboard (thanks for the roundup in *AS* 19!). However, I do not want the AT-Once Plus, so therefore my budget limits me to the KCS Power PC board. Seeing that this plugs into the trapdoor slot, is it possible to run both the emulator and my RAM expansion simultaneously?

I wish to run *Turbo Pascal*. Will *PC-Task* do this job anyway? Also, is there a program available that will allow me to format PC disks on my Amiga? I hope you can help me.
Darren Kemp
Leeds
West Yorkshire

You make it sound as if the *KCS* card is a poor alternative to the *AT-Once* card. In my opinion (and I know many of my colleagues will agree with me), the *KCS* card is a far superior product. Although it uses a slower processor, the difference in speed between the *KCS* card and the *AT-Once* is hardly noticeable. In some circumstances (screen handling, for example), the *KCS* card is actually faster! I've got a KCS card installed inside my 2000 and I swear by it!

Unfortunately, it's not possible to use both your RAM expansion and the *KCS* card simultaneously. It's not all doom and gloom, though – don't forget that the *KCS* card comes complete with its own built-in 1Mb RAM expansion, so you won't be losing out. Your best bet is to sell your RAM expansion and put the money towards the *KCS* card.

As for *Turbo Pascal*, I see no reason why *PC-Task* couldn't handle the job, but compilations would be unbearably slow. Not only that, but *PC-Task* doesn't support hard disks, so running *Turbo Pascal* on a floppy-based system would be bit of a joke.

As for the Amiga MS-DOS disk formatter, why not treat yourself to issue 40 of our sister magazine, *Amiga Format?* They gave away a program called *CrossDOS* that will do just the job that you described! Phone Future Publishing's back issues warehouse ☎ 0458 74011 to check availability. Alternatively, you could look around for a public domain program called *MessyDOS* – it may be all you need. ***JH***

TRY A SAMPLE?



I own an A500 Plus with 2Mb of Chip RAM and am thinking of adding an A590 hard disk as well. I really want to get into MIDI and sampling and want to be able to create and use 16-bit samples with MIDI sequencing software. Over the last few months I have been hunting through a number of computer and electronics magazines reading reviews, buyers' guides and so on, looking for packages that are as good as some of the Atari ST offerings. I've narrowed it down to three: Steinberg *Pro-24* , Blue Ribbon SoundWorks' *Bars&Pipes Professional,* and Dr T's *KCS (level 2).* Which is best and how do they really compare to Atari offerings such as *Cubase* and *Creator/Notator?*

I'm also very interested in the new 16-bit stereo sampler from Microdeal. Can you tell me about the software's features?
Reza Kish
Richmond
Surrey

For years I've been telling people that Amiga MIDI software is getting better. This is perfectly true, but the trouble is that Atari ST software has also improved as well and at the moment the differential between the ST and Amiga music packages remains almost as wide as ever. So the bad news I'm afraid is that if you didn't already have an Amiga but were after *Cubase* and *Creator/Notator* quality software, then I'd have said that at the moment your best bet would be to get an Atari ST or Falcon.

Having said that, I must say that at least two of the Amiga sequencers you mention are pretty impressive: I've used Dr T's *KCS* for a long time and have found it versatile, well supported, and very reliable – so much so that I even use it on live gigs. *Bars&Pipes* is another package that I use regularly, but despite the fact that it is innovative and more powerful than *KCS* in many respects, I personally tend to regard *KCS* as a better "work-horse" sequencer. But be warned: I know an awful lot of Amiga musicians who take exactly the opposite view to this!

Steinberg *Pro 24* doesn't seem to have gained much support from the Amiga community, and although I did use a review copy for about a month when it was first released, I've had nothing to do with it since then. Of late I have not come across anyone who uses this particular package, although one good reason for going down this trail would be to shorten the learning curve if, say, you were moving to an Amiga set-up after using *Pro 24* on an ST.

16-bit samples are a new area as far as the Amiga is concerned and there aren't any Amiga sequencers that can use them. Microdeal's *Clarity 16* (£149.95 from Microdeal ☎ 0726 68020) is a bit of an unknown quantity at the moment – in theory it is going to provide low-cost, MIDI-based, 16-bit sample triggering, but on my machines the software crashes regularly and it remains to be seen how useful the package will be to serious musicians – particularly since there is no provision for direct-to-disk recording and playback. Alternative options, however, such as the 16-bit Sunrize boards, are of course pretty expensive – for details, contact distributor HB Marketing ☎ 0753 686000.

Incidentally, there's another snag. If you want to do real MIDI sequencing using something like *Clarity 16* as a 16-bit sound output source, then you are going to have to drive the Clarity cartridge with sequencer-generated MIDI data. You will not be able to do this with just one Amiga, because it'll be impossible to run *Clarity 16* and a sequencer program at the same time. It'll mean another Amiga set-up (and possibly new hassles), and I suspect that you might be better off

using the Amiga for your conventional sequencing needs and adding an established 16-bit sampling MIDI keyboard or sampling module to your existing set-up. ***PAO***

SPEAK TO ME!



1. When I enter tool types (–M –N –P#) in the Say icon's information window and save the changes they are not recognised when I run the program, although if I enter them into the input window after the program is running, they work. Why is this?
2. Is it acceptable to re-format IBM PS/2 disks on my Amiga?
3. Do I have to throw a disk away if it has a hard error?
Dave Wilkinson
Sutton Coldfield
West Mids

1. Probably because the **Say** program does not read the **ToolTypes** array; the vast majority of Workbench-based software does not!
2. Yes. You can use any double-sided, double-density 3.5-inch disks on the Amiga. Quad-density disks are usually acceptable, but are not recommended – just in case you ever get a 1.6Mb drive.
3. No – but you must re-format it. Only if the format process fails should the disk be dispatched to the bin. It's usually a good idea to use *DiskDoctor* before you re-format to try and rescue any files that might still be on the disk. ***MS***

MULTIPLOT MUDDLES



I refer to *Multiplot*, reviewed in issue 14 of your magazine. It seems to be just what I want, but I cannot get it to run on my data! The article said: "Requirements: Workbench 1.3 or higher, including Maths libraries, assignments of ENV:, T:, & CLIPS:. The c: directory must contain the files c:run, c:failat, c:mount and c:type." Seeing that I have Workbench 2 I assume the maths libraries are in ROM.

The startup-sequence has the assignments okay, but the c: directory does not show c:run and c:failat although mount and type are present. So, how do I get these files into my c: directory?

I do not have any requirements to output to printer, so can I forget the PLT requirements? Again I quote: "The directory which contains *Multiplot* must contain a sub-directory called 'MPlot support', which must contain the files 'intro.scn', 'txt 2 icad', 'plot2draw' and 'HPGL2PS'. The file 'MPlot.def' should either be in the 'MPlot support' directory, or in the S: directory." Are these files just for printing, or are they essential for the running of *Multiplot?*

Since I have Workbench 2, no notepad is provided. I do not wish to buy a word processor because I still use my BBC B and second processor with extra memory, and *Wordwise* and *View*, which cope with my modest requirements.

How do I insert my X and Y data columns into the clipboard? It would be much appreciated if you could sort this out for me. I use my Amiga purely for mathematics, using *APL2*, which in a few keystrokes can perform the most complex mathematics to an accuracy of 15 digits. To plot a graph we have all of the above rigmarole. Surely there must be an easier way!

The curves provided in *Multiplot* respond to commands such as "zoom", "cross-hairs" and "polynomial calculations" and so on, but I cannot run my own data. So presumably the program has loaded correctly, and the failure is my lack of knowledge of the Amiga.
C E Williams
Cockermouth
Cumbria

First, my thanks to 17-Bit Software who graciously supplied a copy of *Multiplot*. Now, to the problem: the reason why *Multiplot* will not run properly with your data is most likely to be the format of the data that you are entering. The best way to find out how the data files are constructed is to actually look at one of the examples with a text editor such as **ed**. For your data files, try and copy the format from these given examples. Here's what one of the files might look like:

```
*TITLE* Plot Title
*XLABEL* The X Label
*YLABEL* The Y Label

*LEGEND*
0. 0.
0. 100
10 100
10 0.
0. 0.


*LEGEND*
2 20
2 80
8 80
8 20
2 20


*LEGEND*
11 -10
-1 -10
-1 110
```

Once you have set up your data in this format, everything should work fine. You can edit your own data file using **ed** from the Shell.

It is worth taking note that not all the maths libraries in Workbench 2 are held in ROM, but those that are not can be easily tracked down on the Workbench disks.

The files that are contained in the "Mplot support" directory are not just to do with printing, although I assume that the program will load without them. And as for any extra functions – to be on the safe side, do as the instructions say and keep them where they are. ***WR***

THE RACE IS ON



I have an A500 with a Canon BJ-10ex bubble jet printer which I use to print out illustrations and documents from *DPaint* and *PageStream* respectively. Although the print speed from *DPaint* is quite acceptable, printing from *Page-Stream* takes an absolute age. Is there anyway to speed it up?
John Mathews
Bristol
Avon

Printing from a desktop publishing program such as *PageStream* will take longer simply because the program doesn't just perform a graphic dump, as *DPaint* does. Instead, a DTP program has to create a very high resolution version of the page in memory (up to 360 dots per inch when printing to a BJ-10ex!) to ensure maximum print quality. This obviously takes time – which is the reason why *PageStream* prints so much slower.

It is possible to speed up printouts from *PageStream* a bit by using the *CMD* utility on your Workbench disk. *CMD* is a very handy little program that traps the output to your printer and writes it to a disk file instead. This can then be sent to the printer "en masse" once *PageStream* has done its stuff. However, the files that *CMD* produces do tend to be rather large – around 500K is a reasonable average.

To use *CMD*, simply swap back to Workbench as soon as you'd like to print your page. Then enter the CLI and type the following command (don't forget to replace <filename> with the filename that you'd like the print file to be stored under!):

```
SYS:System/CMD Parallel ☛
<Filename>
```

You can then go back into *PageStream* and print your document. You'll notice that instead of sending the printer information direct to the printer, the Amiga saves it off to disk. When *PageStream* has finished printing and the drive light is no longer lit, go back to the Shell and type the following command:

```
Copy <filename> PAR:
```

Speed isn't the only advantage of this approach. If you have a document that you feel that you'll need to print out again in the future (a company logo, for example), you can store it permanently on disk and then print it out again simply by "copying" the print file to the parallel port. Once the print file is there, you'll find that the document will "print" even faster than *DPaint!* ***JH***

ANY DRIVE WON'T DO



I have been given a Conner CP341i type 43 hard drive. My question is whether it is compatible with the A500 and can it be connected and run via the SCSI port of the A590?
CJ White
Orpington
Kent

Unfortunately your drive is an AT-IDE drive and won't work with the Commodore A590 at all. You are probably best off trying to sell the hard disk to a PC owner who will be able to use it on a PC without any problems. ***JR***

DRIVING ME CRAZY!



Until recently, my machine ran fine, but now when I run *Kindwords 2 & 3*, and some other software – *Vista* for example – the whole machine freezes. If I eject the disk, and put it back in again, it's okay. The CIA chips seem to be fine, so what's wrong? I also have a "Big Lump" PSU, and when I plug in the printer, the external drives do not work, even when I switch the power supply on. So what's wrong?

Also, can you make a processor "swapper", like a ROM sharer, between a 68000 and a 68010?
Simon Hughes
Eastbourne

The symptoms you describe could be down to several things, Simon. The first and most obvious thing I would worry about is viruses. Do you check your disks regularly to see if they are virus free? If not, do so soon – you can use *Vius Checker*, the latest version of which is yours on this issue's cover disk.

You say the 8520s are okay. Are you sure? How do you know? I would also suspect the Gary chip, which has a major role handling the devices you mention. Try borrowing another power supply from a mate, and see if it works without the external drives connected. Now, if (a) the same

problems occur; (b) you know the disks are virus-free; and (c) the 8520s are okay, then try replacing the Gary chip – borrow one off your mate first, if possible.

It's perfectly feasible to have a daughterboard holding a 68010 – in fact, that's just what accelerator cards are. Unfortunately, it's not quite as simple as with a Kickstart ROM, because the different specifications of the 68010 would require several other components on the board. The limited increase in processing power from a 68000 to a 68010 would not really support a market, hence the usual option of '020, '030, and '040 cards. ***WR***

PLAY FASTER

My main use for my Amiga is to run a MIDI sequencer, but I like to play the occasional flight/driving simulator. Some games (notably *Grand Prix* from Microprose) give you the option to change the detail of the games graphics. However, when the game is run using the highest possible detail setting, the game slows down to a veritable jerk. How can I speed up my games? Do I need faster graphics chips?
J D Glasscoe
Rugby
Warks

What you need is a processor accelerator board. Depending upon the type of processor used and the clock speed of the whole affair, a processor accelerator can speed up not only games, but virtually every aspect of your Amiga's operation. If you don't believe me, try running MicroProse *Grand Prix* on an A4000 – thanks to the A4000's 68040 processor and faster RAM chips, some applications can run up to 38 times faster! Processor accelerators don't come cheap though – expect to pay around £200 for even a fairly basic 68020-based card with no 32-bit RAM. See the accelerators feature starting on page 28. ***JH***

IFF TEXT INTO DPAINT?

Is it possible to import text from a word processor into *DPaint IV*? I have *Final Copy 2* and I keep getting a "Not an IFF file" error message displayed. Is it that the format of word processed text can only be changed in DTP packages?
Alex
Cleveland

Importing text into *DPaint* is not possible under normal circumstances. This is because *DPaint* only accepts IFF files, and word processors use a variety of formats, many of them dedicated to the specific package itself. There is a way to get around this though, and it really is simple. You need to use a screen grabbing package such as *Screen-X* or *Grabbit*. This enables you to grab any multi-tasking screen and save it as an IFF file. This can then be imported directly into *DPaint*. You will obviously not be able to use *DPaint* in the same way as *Final Copy 2* – you can't edit the text once it's saved as a graphic, for one thing – but it's amazing what a little bit of cutting and pasting can do. ***WR***

ALL AT C

1. I have *NorthC*, and have created the NCBoot disk. I have also purchased the Commodore include files, but do not know what do do with them – please will you tell me?
2. What is the difference between *Aztec C* and *Lattice C*?
3. When using the NCBoot disk, when I compile a program I get the output inside the NCBoot window, but when I programmed using BASIC, I was used to a separate output window. How can I do this using C?
Simon Hull
Monkseaton
Whitley Bay

1. The **include** files are needed when you do Amiga-specific functions, such as opening windows and screens, for example. As you learn to program in C, you will find out what they are for. I'm gradually introducing them in the C programming column here in *Amiga Shopper*.
2. Well, *Lattice C* is no more. It's now called *SAS C*, and is currently the best C development package for the Amiga by far. The latest version is number 6.1. For further information on *SAS C*, you can contact HiSoft. *Aztec C* is another powerful commercial C compiler available for the Amiga.
3. Well, the easiest way of doing this would be to redirect the output of your program to your own window. If your program is called "test.x", for example, you could try this:

```
test.x >con:0/0/640/200/☛
Test_Shell
```

If you've typed it in correctly, the output will appear in its own window. ***TS***

INSTALL-IT-YOURSELF

I intend to buy an IDE 2.5-inch hard disk drive for my Amiga 600 but I have a few queries. I wonder if you can help.
1. Does the disk drive need any additional mounting hardware to fix it into the Amiga 600?
2. Do I need to buy or make cables to connect the power, the LED or data signals from the main PCB to the drive?
3. Will standard AmigaDOS allow me to partition the drive, make a bootblock, and so on?
4. If so, can you detail the procedure?
Geoff Willett
Hawley
Kent

1. The Amiga 600 does not need any additional mounting frames to add a 2.5-inch IDE drive, except four small screws that must be the right size to fit your hard drive. Make sure your drive supplier gives you these with the drive.
2. You do need a data cable. The correct type is a 44-way high-density IDC connector – these are specially made for 2.5-inch IDE drives, and standard 40-way IDC cables will not work. Data, power and LED information all share the one cable, unlike larger hard drives.
3. You will need some extra software to partition and format your drive. This can be found on the Amiga 600HD install disk. You can either borrow it from a friendly A600HD owner, or buy your hard drive from an Amiga dealer who will pre-format the drive for you, so all you need to do is plug it in.
4. With the Amiga 600HD install disk, boot the disk (making sure it is write-enabled, so use a copy – your friend will not be impressed if you ruin his or her disk!), and then click on **HDToolbox** (in the tools drawer). You will then get a screen showing the drives connected to the system. One will be shown, and identified as **UNKNOWN**. Click on this and then click on the **Change drive type** button. Click on **Define new** at the bottom, and then on the **Read configuration** button. This should fill in the boxes with information about your hard drive. Don't worry, you don't need to understand it!

Click on **OK**, and make sure the drive type you have just created is selected in the list – if not, click on it to highlight it. Select **OK** and you will be returned to the main menu.

The drive type should now be shown alongside the address (0) for your drive, with status "Changed". Click on **Partition drive** (you never need to do a low-level format). For large drives this defaults to two partitions. You can now change the number of partitions on your hard disk by deleting, re-sizing and adding partitions to the bar showing your hard disk. Make sure all the **Partition Device** names are different (**DH0:**, **DH1:** and so on are good choices) and make sure you select "bootable" for only one of them (usually the first one). Click on **OK**. Choose **Save Changes** from the menu, and you have finished the tricky bit.

Boot Workbench and you should see some unusual icons on your Workbench screen – **DH0:JFQF**, or similar weirdness. These are unformatted drives. Select them one by one, and choose **Format disk** from the **Tools** menu on Workbench. If you have Workbench 2.1 or 3.0 choose the **Format quick** option. If you have Workbench 2.04, it is faster to use the Shell to format your drives by typing in the following:

```
SYS:SYSTEM/FORMAT DRIVE DH0:☛
NAME MyNewHardDrive QUICK
```

Do the same for your other partitions, substituting **DH1:** or whatever for **DH0:**, and choosing different silly names to replace **MyNewHardDrive**.

Now reboot, again, using the 600HD install disk. Run the **InstallHD** icon, and follow the on-screen instructions, inserting disks when asked, and your hard disk will then be ready. Reboot, this time without any floppy disks in the drive, and your hard disk is installed! At least you only have to do this once. ***JR***

DEAD AND BURIED?

Now that the A1200 has been released and many magazines are claiming that the A500 will soon be dead and buried, how long do you think that support for lesser Amigas such as the A500 and A600 will continue? Having only recently bought my machine, I'm not overly keen on the idea of having to sell up and buy a new machine!

Secondly, is it possible to upgrade the A500 further than just 1Mb through the trapdoor connector?
PH Clement
RAF Gutterslоh

I think the predictions of the A500's (and indeed the A600's) quick demise were rather premature, and the kind of journalists who are responsible for this sort of ridiculous scare-mongering should be taken out and shot. The fact is, the A500 still accounts for the vast majority of the Amiga user base in this country. (I'm not sure of the exact figures, but I expect the A500 still accounts for around 90% of the market share.) With such a huge number of people still using A500s, it would be financial suicide for any company to suddenly stop producing products for the A500 and support only new machines such as the A1200.

That's not to say that development will continue at its current pace, though. Although many

products will be released for both the A500 and the new Amigas, you'll eventually start to see products being released that take advantage of the A1200's extra facilities. It won't just be A500 owners who suffer though – anyone who owns an Amiga that doesn't come equipped with the AGA chipset will eventually start to feel rather left out. However, these will undoubtedly be specialist products – other mass-market products such as hard drives and processor accelerators will continue to be developed for the A500 for a long time to come. Rest assured, the A500 is still alive and kicking!

Several jumbo RAM expansions are available for the A500 that offer up to 2Mb of extra RAM through the trapdoor connector. These usually require you to fit a jump lead between the board and the Amiga's GARY chip, so stay well clear of them unless you feel confident enough to open up your machine and fit the jumper. But apart from this minor problem, they're great little expansions. Check out the ads in this issue of *Amiga Shopper* for the best current prices. ***JH***

INPUT AND OUTPUT

I have programmed before on the Commodore 64 using BASIC and machine code, and I wasn't too bad at that, but the Amiga is very different!

I can open a window and screen using OpenWindow and OpenScreen, with their definitions set up. What I want to know is how to do this so that I can first design my own screen, say, in *DPaint IV* so I can have better graphics. Do I need to change the format that *DPaint IV* saves in from IFF to RAW? Can I do the same thing with gadgets?

Also, can you tell me how I ask for input from a window – just simple things, like a filename for example? Could I use the console.device, and if so, how do I open one?

Could you point me in the right direction and tell me how you open windows and get to choose a file or directory with a simple mouse click? Most programs have a bar that moves up and down when you press a gadget on the screen which highlights the file or directory.

I am using *DevPac 2* and I'm programming in assembly language. If you can't give me the full answers, could you recommend a book that would show me how these tasks are done?
David McGlynn
Winsford
Cheshire

There is not much more you could have asked! You certainly do need a good book or two. First, I would strongly recommend that you follow the C programming series here in *Amiga Shopper*, not to actually learn the language (although for the sort of thing you seem to be wanting to do, C is much better suited), but so that you can understand the official Commodore Libraries book that little better. This, together with the Includes And Autodocs volume, are by far the most useful two books that you can have.

It's not necessary to write your own file requester these days, because they've been written before. There is little point in re-inventing the wheel, to be honest. If you are using Workbench 2 or 3, you can use functions in the **asl.library** to ask the user for files. If not, there are many public domain file requester libraries, two of which are certainly worth mentioning: **reqtools.library** (up to version 2.1 now) and **req.library**. Both are available with full documentation.

Briefly, on the subject of the **console.device**, this is certainly the most complicated way of going around this sort of problem – but it's also the most flexible. There is a

CODE CLINIC CODE CLINIC CODE CLINIC

TOBY SIMPSON DEBUGS ANOTHER READER'S PROGRAM

Author: Anthony Chancer
Program: Simple test routine to show requesters.
Language: 68000
Fault summary: Crashes when called if an argument is specified to appear inside the requester.

This month we look at a problem which I had myself only a few months ago. Owners of the RKM *Libraries* book will know that it is heavily orientated towards C programmers, and if you're a 68000 assembly language sort of person, it can take a fair while to figure out what is going on – and a working knowledge of C is almost essential.

JARGON BUSTING

printf – A general-purpose string output routine in C.

RKMs – Rom Kernal Manuals – The bibles for Amiga programmers. Weighing in at a hefty 10 tonnes (*surely not! – ed*), these books are invaluable. And also quite expensive. The most useful two are *Includes and Autodocs* (third edition) and *Library reference manual* (third edition). Ask at your local specialist computer bookshop.

Some of the functions are quite complex, and very little information is supplied about how to call them from assembly language. For any information whatsoever, you'll need details of each function itself – the *Includes and Autodocs* book. This, at least, tells you what registers to use when calling things.

Even with this lot at your finger-tips, it's still possible to become confused. Take **"EasyRequest"** for example. **EasyRequest** is a Workbench 2 routine that was added to the **intuition.library** as a simple replacement for the **AutoRequest** function. It's designed to be a super-easy method of bringing requesters up on screen, along the lines of "Please insert disk blah blah in any drive". The really exciting thing about it for C programmers is that the string can contain arguments in exactly the same way as **printf**. So, it's possible to say "Please insert disk %s in any drive" and specify a pointer to the string, and the operating system will sort the whole lot out for you.

You'd have thought that **EasyRequest** would be just that. Anthony Chancer, however, disagrees. He feels it should be called "OnlyEasyFromCRequest". What he was trying to do was quite simple: he had a routine that would open a requester and show the name of a library that couldn't be opened, and the version wanted – for example: "Could not open dos.library V39". Unfortunately, **EasyRequest** crashed every time he specified any arguments.

The fault itself turned out to be quite straightforward in the end. To illustrate it, let's have a look at the function definition for **EasyRequest,** from the third edition of the *Includes and Autodocs* book:

```
num = EasyRequestArgs☛
(Window, easyStruct, ☛
IDCMP_ptr, ArgList)
d0 a0 a1        a2      a3
```

The problem arises because the explanation of **ArgList** is confusing to non-C programmers. Anthony was calling the routine like this:

```
move.l  #0,a0
lea             easy_struct,a1
move.l  #0,a2
lea             my_arg,a3
move.l  int_base,a6
jsr  _LVOEasyRequestArgs(a6)
rts
```

His argument looked like this:

```
my_arg: dc.b "dos.library",0
```

Here's what was happening. **EasyRequestArgs** is actually expecting a pointer to a list of pointers to arguments, not a pointer to the argument itself! Sounds complex? It isn't. It's nice and easy. In the case of Anthony's program, the letters **d**, **o**, **s** and a period "." were used as the pointer to the argument. As you can imagine, this would make a mighty strange pointer. We could fix the program by changing the **my_arg** line to this:

```
my_arg: dc.l argument_1

argument_1: dc.b ☛
"dos.library",0
```

And this would work. **EasyRequestArgs** would look at **my_args** for a *pointer* to the first argument. Pointers are full longwords with addresses to things. In this case, our pointer points to **argument_1,** which is, in this case, our first and last argument. This will work a treat.

IT'S THE LITTLE THINGS

There are a number of little things which Anthony can improve in his program to make it better. One is a short cut to clearing address registers. As all us 68000 programmers know, you can clear a data register like this:

```
clr.l d0
```

What not so many people know is that the following is a lot quicker and achieves the same thing:

```
moveq           #$00,d0
```

Unfortunately you can't do either of these with address registers, so most people do this:

```
move.l          #0,a0
```

A rather neat shortcut – quicker, shorter, and generally much sexier –

much easier way – if you simply want to print text to the screen and get the user to input things, then I recommend you have a look at the **dos.library** and opening console windows. ***TS***

DISNEYLAND DREAMER



During the summer I will be going to Florida for my holidays, and I would be grateful if you could tell me whether there would be any problems (excluding customs limits) on buying software while out there? I am aware of the problems associated with the smaller NTSC screen size, but also, when I switch my computer to the 60Hz mode, the screen flickers horribly. (I think my TV lacks vertical lock.)
J Putsman
Billingham

There are no problems about buying software in the States and using it here, but there is a need here for a little explanation about modes. You say that you are using your Amiga with your TV rather than a specialised monitor. If you try to access the higher modes with a normal television, then you will experience horrible flickering. I presume you are using a modulator, and what this does is give you 50Hz frame frequency – the PAL standard. If you go for a higher frequency you are asking the old TV to lock on to a frequency which it cannot handle.

An Amiga monitor – the 1084S, for example – will cope with the 60Hz mode. A multiscan monitor will too. The NTSC (American TV-standard) mode that you refer to will actually work on a normal 50Hz PAL Amiga with a TV, but the bottom three-quarters of the screen will be blank because of the lower vertical resolution of NTSC screen-modes. There is no need to switch to the 60Hz mode on your Amiga – the software should run fine in 50Hz. ***WR***

HATCHING OUT

I have a couple of questions concerning the A1200. 1. Will it be possible to replace the A1200's internal drive with a hard drive at a later date? If so, will it be a straight swap or will I need some extra circuitry and software?
2. Assuming that Commodore don't supply the A1200 with an optional hard drive such as the 20Mb unit fitted to the A600HD, how easy is it to install a higher capacity drive to the machine?
3. Just what is the mysterious hatch next to the A1200's mouse port?
Kevin Millyard
Feltham
Middlesex

1. The A1200 comes complete with its own built-in IDE hard drive controller and space for the internal fitting of a IDE hard drive. You therefore don't need to remove its floppy drive to install a hard drive.
2. Although the current batch of machines that Commodore are shipping aren't equipped with hard drives as an option, the A1200 will be made available with "official" hard drives at a later date. In the mean-time, several *Amiga Shopper* advertisers are already offering the A1200 with hard drives of up to 300Mb in size. Scan the ads in this issue for more information. Failing that, why not check our feature in *AS* 23 on fitting hard drives to A600s and A1200s – you'll be surprised just how easy the process is! (To order that issue, see page 116.)
3. That mysterious hatch is there "for future expansion". No hints are yet available about what sort of devices will use this hatch, but my guess would be that we can expect such things as flicker fixers, sound processors (who knows, a DSP upgrade may even use this port!) and perhaps even a SCSI-2 interface. In time-honoured fashion, we'll just have to wait and see! ***JH*** AS

CODE CLINIC

is this elegant little line:

```
suba.l        a0,a0
```

Subtract a0 from itself! And it works fine too.

The other matter is the calling of **EasyRequestArgs** itself. You can write macros to make your life a whole lot easier, and reduce the possibilities of making bugs. If you're not sure about macros, consult your assembler manual to find out how they work. This month's example program contains one for accessing the intuition library routines. Its simply called "INT". I can type:

```
INT  EasyRequestArgs
     ; Display our requester
```

And the *assembler* does the work for me – it actually converts the above line to:

```
move.l        IntBase,a6
jsr  _LVOEasyRequestArgs(a6)
     ; Display our requester
```

This reduces the possibility of me making mistakes by reducing the places I can make mistakes in. Handy to remember.

THE PROGRAM

This month's program is a simple demonstration of **EasyRequestArgs** in assembly language. It was tested using *DevPac 3*, but will work fine on all versions of *DevPac*. You will need Workbench 2 or higher to run it, and you'll need the **include** files supplied with commercial assemblers such as *DevPac*. If you are using a PD assembler, you can get the **include** files, together with all sorts of goodies, for £25 from Commodore – for full details, see the C column in *Amiga Shopper* 25. (If you missed that, turn to page 116 for our back issues service.)

THE LISTING

```
TTL  Amiga Shopper Code Clinic EasyRequest demo.
;
;
;  Shows an easy requester with a couple of
arguments in it.
; By Toby Simpson, For Code Clinic.
;
;
   section     easy_code,code
;
; — Includes ....
   incdir      "inc:"
   include     "exec/exec.i"
   include     "exec/funcdef.i"
   ; YOU MAY NOT NEED THIS.
   include     "exec/exec_lib.i"
   include     "intuition/intuition.i"
   include     "intuition/intuition_lib.i"
;
_EXECBASE:     equ     4
   ; exec.library base.
;
; — Library access macros ....
INT:  macro
   move.l      IntBase,a6
   jsr_LVO\1(a6)
   endm
   ; For calling intuition.library
SYS:  macro
   move.l      _EXECBASE,a6
   jsr_LVO\1(a6)
   endm
   ; For calling exec.library
;
; — Our main code
.....................................................
....
;
START:                   lea    IntName,a1
   moveq       #LIB_VERSION,d0
   SYSOpenLibrary            ; Open intuition.library
   move.l      d0,IntBase
   beq.s       ST_Lib_Fail
;
; — Show our requester ....
   suba.l      a0,a0
   ; Open on workbench screen.
   suba.l      a2,a2
  ; No shared IDCMP
   leaer_Our_Args,a3         ; Our argument list.
   leaer_Easy_Struct,a1
  ; Our easy request struct.
   INTEasyRequestArgs
;
; — d0 contains the button number we pressed at
this point ....
; .... put code in here to process buttons
;
; — Now close the library and quit ....
   move.l      IntBase,a1
   SYSCloseLibrary
  ; Close library after us.
ST_Lib_Fail:   moveq   #$00,d0
   rts                       ; Return to dos.
;
; — Data for our program
..................................................
;
   section     easy_test,data
;
; — Misc data ....
IntName:       dc.b    "intuition.library",0
IntBase:       dc.l    0
;
; — My EasyStruct ....
er_Easy_Struct:        dc.l  es_SIZEOF
   dc.l        0
   dc.l        er_ES_Title
   dc.l        er_ES_Body
   dc.l        er_ES_Gadgets
;
er_ES_Title:   dc.b    "AmigaShopper Code Clinic:",0
er_ES_Gadgets: dc.b    "Yes|Maybe|Possibly|No",0
er_ES_Body:    dc.b    "My string is %s, and %s",0
;
er_Our_Args:   dc.l    arg_1
   dc.l        arg_2
;
; — Arguments themselves ....
arg_1:                 dc.b  "string-string",0
arg_2:                 dc.b  "Another",0
;
   END
```

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Professional pages

Which is the better Amiga DTP package, PageStream or Pro Page? Each has its advocates, but with the release of Pro Page 4, Jeff Walker has decided which one he'd opt for...

Here we go, leapfrog time again. Many Amiga DTP users alleged that *PageStream* version 2.2 had bettered *Pro Page 3*, although I believe this has more to do with wishful thinking than actual fact. While *PageStream* certainly has more built-in features than *Pro Page*, more doesn't necessarily mean better.

The truth is that neither DTP package is as good as it should be. If we could mix *PageStream's* features with *Pro Page's* quality and accuracy, then perhaps we'd be getting somewhere. But we can't. So we have to play leapfrog along with Soft-Logik and Gold Disk.

The latest leap is by Gold Disk, with version 4 of *Pro Page*. And it's actually quite a large leap, arguably larger than the leap from version 2 to 3, with some new features that even experienced users will need time to learn about.

To start with, there's better support for Workbench 2+ screen modes. Upon startup you are now presented with a requester that enables you to choose your preferred screen mode, enabling *Pro Page* to be seen at its best on virtually any monitor. By default it selects the Workbench screen mode and size,

> **"New features that even experienced users will need time to learn about."**

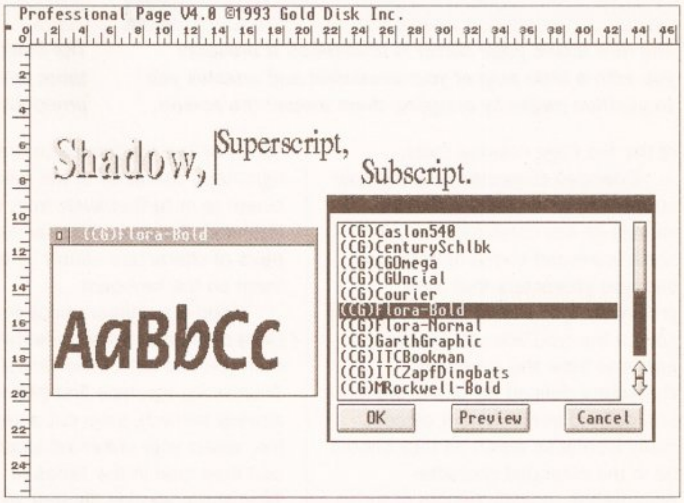
but if you want to open *Pro Page* on a larger size screen – 1,000 by 1,000 pixels, for example – you can.

Autoscroll is supported, the Workbench 2+ feature that enables you to quickly scroll around pages that are larger than can be displayed on the screen. While this eats up graphics (Chip) memory, it is a very fast way of getting from one part of the page to another, particularly at high magnifications.

Talking of magnification, *Pro Page* now supports variable zoom percentages. The old and well-thumbed zoom sizes are still there, but a new Custom facility has been added that enables you to select any magnification level from 10% to 400% in 1% steps. This will please users who would like to be able to display the full width of a page. While there is no "Show Full Width" option, it will take only a couple of tries to find the correct level of magnification for any particular width of page, and if you are *ARexx*-minded it wouldn't be too difficult to create a Show Full Width function genie if you decide you want one. The support for large autoscrolled screens arguably negates the need for variable zoom levels, but the people wanted it, so the people got it.

Typeface support has improved again. Apart from a new version of *FontManager*, which doesn't "go to sleep" as the version with *Pro Page 3* sometimes did, the Typeface requester now has a Preview button that displays "AaBbCc" in the selected typeface. This small preview window can be left open while you click on various typefaces, so you don't have to keep selecting a typeface and then hitting the Preview button to find the one you're after.

You are still limited to the one **CGFonts:** directory though, another feature of *Pro Page* that causes some users problems, mainly those who like to have three million typefaces from which to choose and want them sorted alphabetically, or by styles, in different directories on



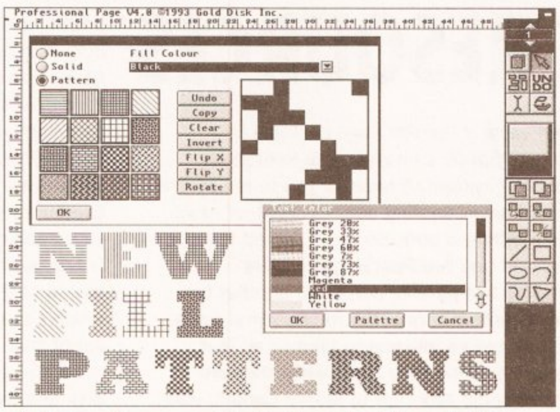
The much-requested Typeface Preview feature, enabling you to view typefaces before you use them, is implemented in Pro Page 4, along with three new type styles: shadow, superscript and subscript.

their hard drives. Can't argue with that – you should be able to work the way you prefer – but I'm afraid with *Pro Page 4* you'll still have to have all your typefaces in one directory.

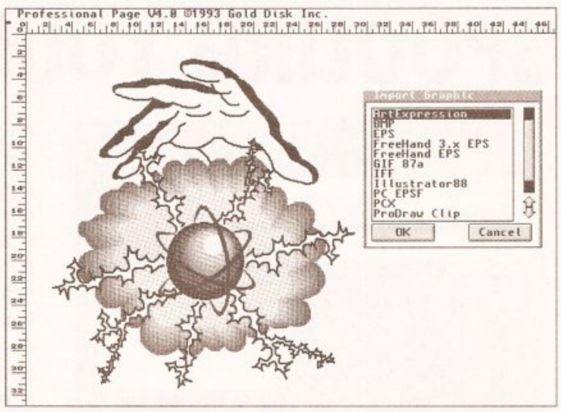
Or manage them by hand, which is what I do – I have a small collection of often-used typefaces permanently in **CGFonts:**, and everything else in alphabetical directories. When I want another typeface I simply copy the the files into **CGFonts:** and run *CG_Update*. When I'm finished with the typeface I move it back into the "library" and run *CG_Update* again. I keep meaning to knock together a little typeface manager program in *ARexx* or *CanDo* but if there are any budding PD/shareware programmers out there looking for something useful to create...

There are some new type styles – Shadow, Superscript and Subscript – and the much-loved *PageSetter*-style text fill patterns have been included. There are 16 pre-defined fills to choose from, or you can create your own. You can choose any single colour for the fill pattern. Text fill patterns are hardly ever used in professional publishing, which is probably why they have never been added to *Pro Page* before, although *PageSetter* has had them for years.

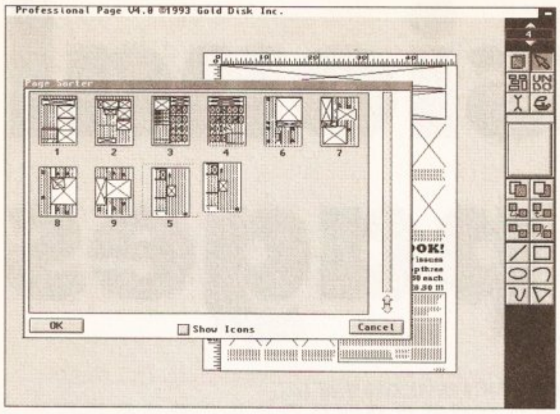
Ah, almost forgot to mention that these fill patterns can also be used to fill any object you create with any



Text fill patterns are of limited use, but if you feel the urge, Pro Page 4 will let you use one of 16 pre-defined patterns – or, of course, you can create your own.



Usefully, a number of new bitmapped and structured graphics formats are supported, including Art Expression files, which get converted to Pro Draw clip format.



The new iconic page sorter is idiot-proof. It presents you with a little map of your document and enables you to position pages by dragging them around the screen.



The ability to work on facing page layouts and still have them print as two separate pages can be a major aid to productivity if you often work with double-page spreads.

of the *Pro Page* drawing tools.

Extended character sets are now supported, which means that via various Alt-key combinations, Alt-numeric-keypad codes or both, you can type characters that were previously unavailable in *Pro Page.* Of course the typeface you are using needs to have the extended characters defined for this to work, and defined in the correct places; many typefaces aren't all they should be in the extended character department, including some of those supplied with *Pro Page,* so don't expect to get ligatures, en-dashes and em-dashes from every typeface. If this is important to you, you might need to invest in *TypeSmith.*

The most important addition to typeface support is Kerning Control. This new feature enables you to create kerning pairs for any of your typefaces, and save out a custom kerning table for each typeface. Almost all of the PD/shareware CompuGraphic or PostScript typefaces are supplied unkerned, and often they are so poorly designed that there are very large or very small gaps between some pairs of letters, which makes for extremely amateur-looking text. With *Pro Page 4* this is no longer a problem.

In the Kerning Control panel you may type in a value (percentage of an "em") or use the mouse to drag the right-hand character of the pair closer to or further away from the left-hand character. You can select pairs of characters simply by typing them on the keyboard.

If you are unsure about which pairs of characters need kerning, then you can select the Times or Triumvirate typeface first (these are already kerned), save out a kerning file, select your unkerned typeface and then load in the Times or Triumvirate kerning file that you just saved. This kerning table will then be applied to your unkerned typeface. Because each typeface requires different kerning values, the kerning values you leach from this file will probably mostly be wrong, but at least you now have a list of kerning pairs so you don't have to work it out for yourself. To me, this feature alone is worth the cost of upgrading. But there's more...

GRAPHICS SUPPORT

Support for bitmapped graphics has been extended to include BMP, GIF (87a), PCX and TIFF formats, all of which may be displayed in up to 256 colours if you have an AGA Amiga, or in shades of grey otherwise. Once they're imported you may of course scale them, crop them, rotate them – do anything to them that you can to normal Amiga IFF-ILBM files.

Structured drawing support has also been extended. As well as *Pro Draw* "clip" and *Aegis Draw* files, *Art Expression* format graphics may now be imported, and *Adobe Illustrator88* format, plus Aldus *Freehand* format. When imported, these get converted into *Pro Draw* "clip" format, which means they get displayed on-screen of course, and it also means you can send them to *Pro Draw* via the hotlink for further editing (and saving as clips) if required. There is not yet support for the Amiga's moribund IFF-DR2D structured drawing format.

EPS (Encapsulated PostScript) and EPSF files are supported as before – as a shaded box on-screen that may only be printed to PostScript printers, unless the EPSF file has a TIFF "header", in which case a bitmapped representation of the EPSF graphic will be displayed on the screen. All the other formats will print on dot-matrix printers because they will have been converted to "clip" or IFF-ILBM format of course.

To display EPS and EPSF files on-screen, and to print them to dot-matrix printers, would require *Pro Page* (or any other DTP program for that matter) to include a full-blooded and complete PostScript interpreter, which would take time to implement and would probably increase the cost of the program considerably. However, because *Pro Page's* import facilities are now modular, it is perfectly possible that this could be included in the future. I guess it will depend on how many people continue to shout about it to Gold Disk. The only important use for on-screen EPSF support is to load a document prepared on another program or computer platform.

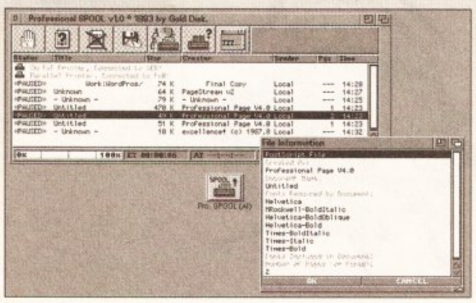
Pro Draw 4 comes with, and is hotlinked to, the *GrE* graphics editor, which was first released with *PageSetter3.* For the life of me I can't imagine why it's in with *Pro Page* because it really is a pile of rubbish that should have been killed at birth. It might be useful for quickly editing the odd bit of ILBM clip art, but, well, *GrE* has hidden shallows.

SORT PROBLEM SORTED

Sorting pages has been made easier. Many's the user who has wanted to insert a page into the middle of a document only to find that they don't remember how to do it and, after struggling through the manual again, still can't work it out. No problem any longer. Page sorting is now "iconic", which sounds like something John Barnes drinks after a football match but is actually just a panel that pops up containing a miniature representation of every page in the document, each of which can be dragged into another position. If you can't sort your pages using this, you need a brain transplant.

Another small but very useful addition is the stick-on note feature. If you've ever left a document part-finished, reloaded it the next day and then sat there scratching your head trying to remember what it was you were going to do next, then stick-on notes will help. They are simple little boxes which you can make notes in and plaster wherever you like. No need to delete them before printing – they get totally ignored at that stage, even if you have the whole page covered in them. In colour mode they are bright yellow and difficult not to

SPOOLING YOUR RESOURCES



PostScript users will enjoy using Professional Spool, which works with any program that outputs in PostScript, not just Pro Page.

An added extra in the *Pro Page* package is *Professional Spool*, an easy-to-use PostScript print-spooling system. It enables you to set up any number of named printing devices, each of which prints to a different port. So if you owned a multi-port card and had two PostScript printers connected to two parallel ports and another two PostScript printers connected to two serial ports, *Pro Spool* would enable you to print to all four printers at the same time. (And while they are printing you could zoom off to Monte Carlo in your Lear Jet...)

You'd give the devices names like **QMS1:**, **EPSON1:**, **LASER:**, **LINO:**, and from *Pro Page*'s PostScript output requester you would send the output to one of these devices, instead of PAR: or SER:. This creates directories and files in RAM (or hard disk if you prefer), and is similar to simply "printing" the PostScript file to disk. The difference is that *Pro Spool* is "watching" what you are doing and enters each file you "print" into its requester. Eventually you will have "printed" every chapter in your book or every article in your magazine (whatever it may be), possibly to two or more of the named devices, and the *Pro Spool* window, which sits on the Workbench, will contain a long list of files.

If you prefer, you can print PostScript files to disk and then load them into *Pro Spool* later. Whichever way you do it, the files end up in a "queue", waiting to be actually printed. All you have to do is hit the Stop/Go button and all the

JARGON BUSTERS • JARGON BUSTERS

Em-dash – A dash as wide as the character "m" in the particular font you're using. An **en-dash** is as wide as an "n" or half an em.
Gutter – The margin on the inside of any page, where the pages are bound or stapled. Text and illustrations have to be kept well clear of this or risk being obscured when the publication is bound.
Kerning – Altering the spacing between (pairs of) letters. For example, the first three letters in AVAILABLE need to be "squeezed up", but the last three don't. If they were all spaced evenly, you'd get A V A I L A B L E, which looks clumsy, especially at large sizes.
Ligatures – Special characters such as "fi" and "ti" for commonly-kerned letter pairs.
PostScript – A language used to describe graphics and text as images to compatible printers. It doesn't rely on pixels, so images can be scaled or rotated without distortion.

THE EASY UPGRADE PATH

If you already use *Pro Page* but haven't yet upgraded to v4 direct from Gold Disk in Canada, you can take advantage of a special offer from Silica Systems ☎ 081 309 1111. All you have to do is send Silica your original *Pro Page* disks plus the cover of the manual – copies of the disks and photocopies of the manual *will not do* – and in return for this small sacrifice plus the trivial sum of just £82 you will receive the complete *Pro Page 4* package, including new manuals. This extra-special offer is only open until the end of June, so hurry – and tell them *Amiga Shopper* sent you.

see, so they can also be used to pass on notes or comments to colleagues who may also be working on the same file.

There are a couple of small changes to the paragraphing system. With *Pro Page 3*, paragraph indents and spacing facilities were changed so that they could be altered only via the paragraph tagging system. Many users complained that they liked it better the "old" way, so it's been changed back. The Line Spacing requester now has a Paragraph Spacing gadget again, and the Paragraph Indent menu item has returned. You can still do it via paragraph tags if you wish, and the actual indent (or "outdent") measurement is taken from the Default paragraph tag setting anyway, so in the end it might be better if you took some time to learn how the paragraph tags work.

One other small change is that *Pro Page* makes a list of up to 32 of the most recently opened files, and the paths to those files. Whenever a file requester appears, *Pro Page* creates a menu called Previous Files from which you can select the files – a great little time-saver, and something that every piece of productivity software should have.

Printing to dot-matrix printers is unaltered. It still takes as long as it always has done, and Gold Disk has resisted the temptation to match *PageStream's* printing speed – which, contrary to popular belief, is not due to "special" printer drivers or because it is a "better" program, but is simply because *PageStream* sacrifices dot-matrix output quality in favour of faster printouts. If you want speed and quality you have to pay a premium, either by buying an accelerator or a faster Amiga, or by buying a PostScript printer.

Pro Page 4's PostScript output requester hasn't changed, but a late addition to the package, documented on a four-page loose-leaf manual addendum, is *Professional Spool*, an easy-to-use PostScript print-spooling system. Full details are below.

SPREAD DELIGHT

There's only one more major addition to *Pro Page 4*, and I've left it until last because it is my favourite feature and something I (and a few others) have been begging Gold Disk to include for some years – Facing Page Layout, or double-page-spread support, to put it another way.

Books and magazines may be composed of single pages, but open either type of publication anywhere you like and what you actually see is two pages, one on the left and one on the right. From a design point of view this double page spread (DPS) is a single canvas and needs to be designed so that left and right pages don't clash, so that they are "balanced". It's all well and good having a facing pages preview (which is what *Pro Page 3* had), but having to make up the two pages separately means you continually have to toggle between layout and preview modes.

Not any more you don't. The new Facing Page Layout feature puts up two pages on the screen – even page number on the left, odd page number on the right – and to all intents and purposes you can treat this DPS as if it were one page. The ruler is marked from 0 to the width of one page, then back to 0 to the width of one page again, making it easy to see where the gutter is. At printout time (PostScript or dot-matrix) you print each page separately, as normal.

This means you can run titles and graphics across the gutter without having to worry about duplicating them and positioning them correctly on each of the pages, as you used to have to. It may seem like a small point, but open any modern magazine or "coffee table" book and you'll see that this technique is used all the time.

This is all very well, but it would be dishonest of me not to mention that there are a few problems with the version of *Pro Page 4* on review here, v4.0A. The most obvious bug is that it sometimes crashes when you're quitting the program. I've spoken to people to whom this happens every time they quit, and I've spoken to people who have never had it happen. To date, it's happened to me three times out of 60 or 70 quits, so it's an annoyance rather than a real problem.

More of a disaster is the fact that imported bitmaps always fill the bounding box right to the very edges, even when you specify margins. This results in any line weight you may have specified for a border being overwritten by the bitmap. The only way to get your border displayed is to move the bitmap within the bounding box so that it is down and to the right a bit (positive offsets), and to make sure that it is smaller than the bounding box, otherwise the bottom and right-hand keylines are overwritten. I've worked around this problem by altering my FitBitmapToBox genie, but I'd rather Gold Disk fixed this bug, and quickly.

It shouldn't take them too long to sort these problems out, and by the time you read this there will almost certainly be another update.

Pro Page 4 still isn't a match for the famous Mac DTP package *Quark XPress*, which is used to produce this (and many other) magazines. But Gold Disk are getting there. The question is: will rival DTP company Soft-Logik get there first?

files in the list will be sent to their relevant ports one after the other. Print progress is displayed as a percentage of work completed, actual time passed and estimated time left to complete the task. The data transfer rate is also displayed – it almost goes without saying that the more devices *Pro Spool* has to serve, the slower will be the data transfer rate. Task priority and buffer sizes can be adjusted to gain optimum speed if required.

Before pushing out the boat, you may select a number of PostScript typefaces to download (Type 1 or Type 3) to any of the devices, which saves you having to select the "include Downloadable Fonts" option in *Pro Page* and consequently speeds up the printing process, particularly if many files share the same typefaces.

So that's *Pro Spool*, and no doubt non-PostScript users are green with envy and fuming that they don't have a similar utility...

Well, you can always use the standard Amiga SMD and Copy commands, but if all that Shell work is too much for you, and provided you have Workbench 2.04 or greater, check out *Fish Disk 810* and a little program by Nicola Salmoria called *PrintManager*. I think you'll be pleasantly surprised.

SHOPPING LIST

Professional Page 4.0A .. £199.95
by Gold Disk Inc
PO Box 789, Streetsville, Mississauga, Ontario, Canada L5M 2C2

Distributed in the UK by:
Silica Systems, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX
☎ 081 309 1111

CHECKOUT
PROFESSIONAL PAGE 4.0A

Features ●●●●○
When *Pro Page* is combined (as it is supposed to be) with *Pro Draw*, there's not a lot you can't do. But there are a few small bugs still to be ironed out.

Documentation ●●○○○
An old version 2 manual and slim version 4 supplement is not good enough documentation for a professional piece of software, to be honest.

Ease of Use ●●●○○
Once you've learned the ropes, it's a doddle, but the poor manuals can make learning those ropes very hard work.

Speed ●●●●○
Considering the complexities of desktop publishing, it's amazing how fast *Pro Page* runs, even on a 68000-based Amiga.

Value for Money ●●●●○
Pro Page 4 is selling through mail order for just over £100. Add £80-ish for *Pro Draw* and you've got an incredibly powerful publishing system for about £200.

Overall rating ●●●●○
It has its faults, and there is still a fair way to go measured by the Macintosh *Quark Xpress* yardstick, but *Pro Page* 4 is currently the most professional DTP program for the Amiga.

Driving ambition

What handy add-on gives you access to as much data as 600 floppies? Jeff Walker boots up the CD-ROM from Toshiba.

Almost all serious Amiga users have a wish list of kit that they want desperately but can't quite yet afford, and the first few lines of every list look very much the same: more memory; more speed; more storage space.

Not necessarily in this order, but the top three best-selling bits of hardware for the Amiga are RAM boards and chips, accelerator boards and hard drives. And when you have saved up enough to go shopping, choosing what to buy can be difficult because there are so many different makes and models. So I'm not going to help you by adding another choice to the "more storage space" category – a CD-ROM drive.

You may consider a CD-ROM drive to be a real luxury, and it certainly isn't a replacement for a hard drive, because hard drives are faster and can be written to, whereas CD-ROMs can only be read (CD-ROM stands for Compact Disc Read-Only Memory). However, there are some very good reasons why a CD-ROM drive can be a better choice than buying yourself a larger or additional hard drive.

Data is the key. If you regularly need read-only access to enormous amounts of data, having that data on a single CD-ROM, which can hold the equivalent of about 600 standard Amiga floppy disks, is a much more practical and effective solution than wasting 600Mb of space on a writable hard drive.

What kind of read-only data? Pictures, for example – either high-quality colour scans for multimedia or desktop publishing, or simple "clip art", which has a myriad of uses. And, again for desktop publishing and multimedia purposes, what about typefaces? You can get thousands of these on one CD-ROM for well under £50; the equivalent on floppy would cost thousands of pounds. And think of the time saved in backing-up all those disks!

Then there's text files. One of my favourite CD-ROMs is jam-packed with the complete transcripts of hundreds of very famous old books that are no longer covered by copyright.

And, of course, there's PD and shareware. You can get hundreds of Fish Disks on one CD-ROM – in fact, this drive comes with two free Xetec CD-ROMs that contain, among other bits and pieces, a few hundred of the early Fish Disks split into program categories rather than disk by disk.



You know how durable and reliable CDs are, so it makes sense to use them to store data your Amiga can read. All you need is the hardware to read them...

There's no doubt about it, even at today's high prices you can recoup the cost of a CD-ROM drive with the purchase of a single CD-ROM.

INS AND OUTS

The CD-ROM drive I'm looking at here comes in two models, external and internal. Both need to be connected to a SCSI card.

The internal drive fits neatly into the 5.25-inch disk drive bay of the Amiga 1500, 2000 and 4000. The slimline Amiga 3000, of course, has no 5.25-inch bay, so you'd need to fit the external model, but at least that model of Amiga comes with a SCSI interface as standard.

The external model, which costs £100 more because of the case, can either plug directly into the SCSI port (usually provided by your hard disk controller card) at the back of your Amiga, or it can be "chained" on to another SCSI device if you've got one already fitted.

Once everything is connected you need to run the setting-up software, which provides you with a "form" to fill in on-screen, rather like *HDToolBox* does when setting up hard drives. It's at this point that novices may start getting the butterflies because it all looks rather technical. Thankfully, Almathera provide a sheet of instructions that amount to "click this button, enter such-and-such in this gadget, select that option, and away you go".

Without these instructions, I had to have two goes at installing the software. Following the idiot-proof steps, which is what I should have done in the first place, I had it up and running in five minutes.

IT'S NOT CDTV!

Part of the software that is provided is a whole load of CDTV startup scripts which, essentially, execute the startup-sequences on CDTV titles after setting up system files, directories and assigns the way a particular CDTV title wants them.

I don't have many CDTV titles, and of the few I do have only one or two "booted" successfully. Almathera provide a list of CDTV titles they've tested, 11 of them known to fail but more than 60 found to work with various Amiga set-ups from Kickstart 1.3 to 3.0. I'm using Kickstart 2 and Workbench 2.1 and out of the titles Almathera says work, some don't on my system. But, to be perfectly frank, if it's CDTV-specific titles you want to run, then you're much better off buying a CDTV to start with. You can always network it to your Amiga with *ParNet*.

This Toshiba CD-ROM drive will read Macintosh (HFS) and PC format CD-ROMs as well as Amiga-CDTV format, and while you will not be able to run any Mac or PC software on such CD-ROMs (unless, of course, you have a PC or Mac emulator in the Amiga), data is normally stored in standard formats – ASCII for text, PostScript for typefaces and clip art, various common graphics formats like GIF, TIFF and PCX for pictures (but not usually IFF-ILBM) – so there's usually no problem reading it.

A little program for playing and controlling normal audio CDs is provided, and the whole system is also controllable from ARexx.

Talking of audio, sound may or may not be important to you. Currently both internal and external models come with a simple 3.5mm headphone audio socket. If you want sound through speakers, you'll have to buy a suitable lead. Almathera say that the design may change later, at which time proper stereo audio sockets will be fitted to both models.

The price of CD-ROM drives is bound to come down over the next year or so. If you're prepared to wait, fine; if not, then you'll not go far wrong with this Toshiba drive, especially seeing that Almathera provide a technical helpline should you have any trouble at all in getting it up and running. AS

SHOPPING LIST

Toshiba external CD-ROM drive £499
Toshiba Internal CD-ROM drive £399

by Almathera Systems Ltd, Challenge House, 616 Mitcham Road, Croydon CR9 3AU.
☎ 081 683 6418

CHECKOUT
TOSHIBA EXTERNAL CD-ROM DRIVE

Quality ●●●●○
Top-quality mechanism in a tough-enough but slightly old-fashioned looking case.

Speed ●●●●○
Data transfer rate is fairly fast, over 300K per second with a 200 millisecond access time, which is more than twice the speed of CDTV...

Documentation ●●●○○
The manual is out of date and not much help to novices, but Almathera supply clear idiot-proof instructions separately.

Ease of Use ●●●●○
Thanks to the idiot-proof instructions, setting up is painless.

Value for money ●●●○○
It's a lot of money, especially if you don't already have a SCSI card, but the ability to buy hundreds of floppyfuls of data for about the price of 100 blank disks might enable you to justify and recoup the cost.

Overall rating ●●●●○
Once you've spent some time with a CD-ROM drive, it's one of those bits of kit that you suddenly can't do without.

The inside story

This month we show you how you can recycle an adder to make a subtractor and also demystify harder sums as the incorrigible Gus Chandler continues poking about in the Amiga's innards.

In this month's exciting episode of "The Amiga Exposed" we continue our journey in the world of digital logic with a close examination of the way in which a computer goes about performing the process of subtraction by re-using much of the circuitry of the MPU (Micro-Processor Unit) that was needed for carrying out addition. Indeed, all that we need to do to perform subtraction is to "mess around" with the number that we want to take away and then feed it, along with the number that we are taking it away from and an extra 1, into a modified version of the eight-bit full adder that we considered at length last month. Baffled? Well, read on and all will become clear.

Now, before we start to delve into the mysteries of binary subtraction, let's just take a minute out to recap the concepts we grappled with last month and remind ourselves of exactly what the functions are of all these different "building block" logic gates.

We've shown the standard symbols that are used to represent the six gates in the box at the bottom of this page. Strictly speaking, it's only necessary to make use of three of them – the AND, OR and NOT gates – because with just these you can construct a functional assembly of logic gates capable of performing any logic operation. The other three logic functions that we have summarised here – the NAND, NOR and XOR (eXclusive OR) – can in fact all be constructed by using combinations of the AND, OR and NOT gates.

Check back to pages 24 and 25 in last month's *Amiga Shopper* if you want to see how these functions are constructed using the basic "building block gates". (If you missed it, turn to page 116 and order a copy!)

HOW COMPUTERS SUBTRACT NUMBERS BY ADDITION

Before we looked at the procedure by which computers deal with binary addition last month, we first considered how human beings go about the task of adding decimal numbers – for the processes are functionally identical. In both cases you start with the least significant digit of each of the numbers (that's the rightmost), add those together, then put the least significant digit of the sum in that column of the answer. Any "carry" digit is then taken forward to the next column and added along with the next two digits from our sum

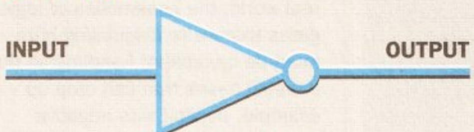
Now when it comes to performing binary subtraction you could follow exactly the same rules as if you were working with a pair of decimal numbers – that means "borrowing 1" from the column to the right as necessary and then "paying back". The trouble however with adopting such an approach is that computers aren't actually equipped to deal with subtraction in this manner – they could be, but the process would be slow and require them to employ additional circuitry within the ALU (the arithmetic and logic unit, which is the internal sub-assembly of logic gates that the 68000 MPU in your Amiga uses to deal with all of the mathematical operations).

Instead, computers do the job of subtraction by following a process that involves taking what is called the "complement" of one of the numbers. The exact method that we're going to discuss is known as "two's complement subtraction". This involves carrying out what is known as a "bit-wise negate" on the number that you wish to subtract and then adding it plus another 1 to the number you want to take it away from. This all sounds rather complicated, doesn't it? Well, don't worry – it isn't really that difficult to get your head around the basic principles.

Let's see if showing a simple worked example helps to make it all clear. We'll assume that we want to subtract the binary number 100 (that's 4 in the decimal system) from

THE BASIC LOGIC GATES REVISITED

NOT GATE



NOT GATE

Function: **Given an input of 1, the NOT gate produces an output of 0. With an input of 0 the output is 1. In other words, the NOT gate's output is a negate of its input.**

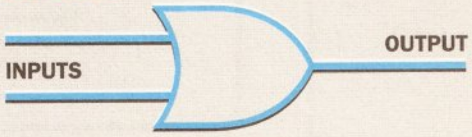
AND GATE



AND GATE

Function: **The AND gate gives an output value of 1 only if both of its inputs have a value of 1.**

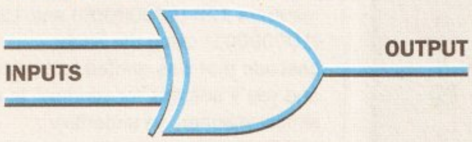
OR GATE



OR GATE

Function: **The OR gate gives an output of 1 if either one or the other of its two inputs has a value of 1.**

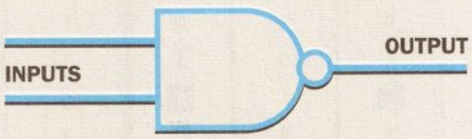
XOR (EXCLUSIVE OR) GATE



XOR GATE

Function: **The XOR gate gives an output of 1 if either one *or* the other of its two inputs has a value of one, but, unlike the OR gate, not if both of them have that value.**

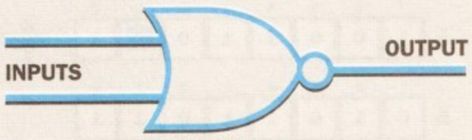
NAND GATE



NAND GATE

Function: **The NAND gate produces an output value of 1 except when both of its inputs have the value 1. Placing a NOT gate in the output line of an AND gate gives the NAND function.**

NOR GATE



NOR GATE

Function: **Gives an output value of 1 only if both of the input values are 0. The NOR gate is equivalent to an OR gate with a NOT gate in its output line.**

the binary number 101 (decimal 5) to give us the answer 1.

STEP 1 – THE BIT-WISE NEGATE (ONE'S COMPLEMENT)

First we have to "bit-wise negate" 100. All this actually means is that we have to apply the NOT function that we discussed last month (that is, we feed each digit of the number through a NOT gate) to each of the bits (each binary digit) in the number like this:

Step 1

NOT 1 = 0
NOT 0 = 1
NOT 0 = 1

which gives us the result 011.

STEP 2 – ADDING

Now we just add the numbers 101, 011 and an extra 1 together:

Step 2

```
  1 0 1
  0 1 1 +
      1
-------
1 0 0 1
```

Er, but we seem to have ended up with the result 1001 (that's 9 in decimal) for the sum 5 minus 4, and we know that isn't the correct answer. Don't panic just yet though – the largest number that we were manipulating had three bits, while the answer that we've come up with has four. You can probably guess that what we do is to take only the rightmost three digits of the answer (this is the three least significant bits), which are 0 0 1, or, if we ignore the leading zeros, we are left with 1 – the correct result. But what about that first bit, the 1 that we've just ignored? Well, it doesn't just get thrown away, but we'll leave considering what it is used for until we come on to number representation next month.

So far we have only dealt with straightforward sums that involve small positive integers. The eight-bit numbers that we've been working with are, as we have explained, limited to representing only 256 different integers – the numbers 0 to 255. Obviously, to be useful in the real world, the assemblies of logic gates that we're discussing here must be capable of handling all the unusual cases that can crop up – for example, dealing with negative numbers and fractions and detecting when "overflow" or "underflow" conditions occur.

We get an overflow when the number that is generated by a mathematical operation turns out to be too large to represent using our eight-bit number. Try adding the numbers 128 (10000000) and 129 (10000001) using the adder cascade that was printed last month and you'll see this for yourself. In a similar manner, an underflow condition occurs when the result is too small – with the way we're currently using eight-bit numbers, this happens if the result is less than zero (it's negative).

In this feature next month we'll

JUST HOW DOES BINARY WORK?

In the decimal system (base 10) that we're all familiar with, there are ten numbers, 0 to 9, that can be used for each digit position. This means that each time we move one digit along in a decimal number (starting from the rightmost digit, which is known as the least significant digit) its value increases by a factor of ten – giving 1, 10, 100, 1,000 and so on.

With the binary system (base 2) however there are only two numbers available, 0 and 1, for each digit position. Therefore as we move from one digit to the next in a binary number its value is changed by a factor of two, so the decimal equivalents of the binary numbers 1, 10, 100, 1000 are 1, 2, 4 and 8.

If you look at the eight-digit binary number we've shown, you'll see that a 1, the most significant digit (and the largest digit value that we can use in binary), represents the decimal value 128, while if we put a 9 in the most significant digit position of our decimal number it gives us a value of 90,000,000.

An eight-bit number ("bit" stands for "binary digit") can have 256 different values, representing the decimal numbers 0 to 255. Remember that the chipsets in the various versions of the Amiga work with 16-bit or 32-bit numbers – we've stuck to using 8-bit numbers in this feature simply because showing something like a 32-bit full adder isn't really feasible given the amount of space on our pages. Alternatively we could print all our diagrams at a quarter of the size and hope that our readers don't mind using a magnifying glass to look at them. The principles that we're discussing in these pages, however, are exactly the same as those that would apply if we were dealing with 16-bit or 32-bit numbers.

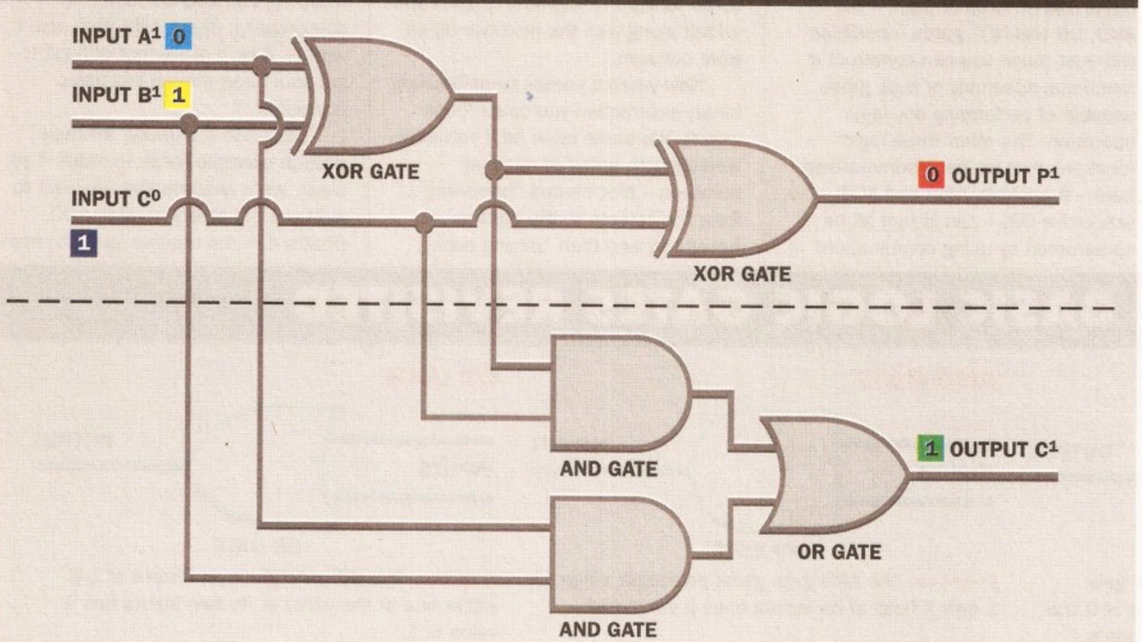
DECIMAL

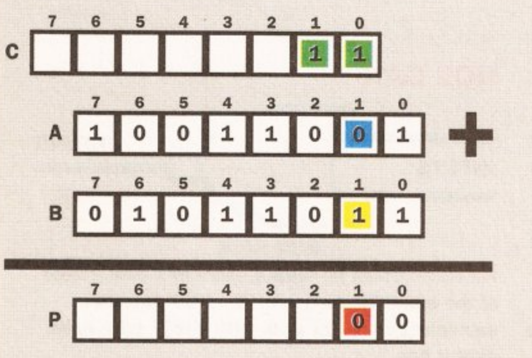
10,000,000's	1,000,000's	100,000's	10,000's	1,000's	100's	10's	units
1	0	0	1	1	0	0	1

BINARY

128's	64's	32's	16's	8's	4's	2's	units
1	0	0	1	1	0	0	1

THE ONE-BIT FULL ADDER





INPUT A	INPUT B	INPUT C	OUTPUT P	OUTPUT C
0	0	0	0	0
0	1	0	1	0
0	0	1	1	0
0	1	1	0	1
1	0	0	1	0
1	1	0	0	1
1	0	1	0	1
1	1	1	1	1

be discussing just how the 68000 in your Amiga represents numbers internally, the use of a sign bit to distinguish between positive and negative quantities, and how fractions are handled. We'll also consider the issue of precision – the accuracy with which numbers can be represented (that is, the number of significant figures that are given in the result).

What we're going to look at first though are the changes that we need to make to the eight-bit full adder assembly that we explained in detail last month so as to adapt the unit to function as a binary subtractor

ADAPTING THE EIGHT-BIT FULL ADDER FOR SUBTRACTION

Last month when we were discussing binary addition we introduced the functional unit called a one-bit half adder and found that this would take two inputs, A and B (the two bits that we wish to add) and produce two outputs, P and C. P was the least significant bit of our answer (that's the rightmost of the digits) while C was the carry (if there is one) to the next column of our sum.

We decided to use a half adder for the first unit of our eight-bit full adder because we only needed to deal with two inputs in this position when adding. For the second and subsequent digit positions we had to use one-bit full adders because they can cope with the three inputs that we now have to process (the next digits of the numbers that we're adding plus the carry from the previous column of the sum).

You should be able to see that we could perfectly well replace the one-bit half adder with a one-bit full adder and still end up getting the same result, providing that we set the third input (that's called C^{IN}) to be 0. We've illustrated the top stages of our eight-bit full adder from last month, and the unit as it has now been modified, in the boxes on this page.

Okay, so we now have our eight-bit full adder assembled from a cascade of eight one-bit full adders. Let's make some additional modifications so that we can also make use of the unit when we want to subtract. If you check back to step 1 of our simple example sum on page 58, you can see that the first thing that we have to do is modify the number that we are subtracting – that is, bit-wise negate it.

This is very simple to achieve with logic gates. All that we have to do is pass each bit of the number that we want to subtract through a NOT gate before we pass it on to the full adder. If you look at our subtractor assembly on page 60, you'll see that all we've done is to insert a NOT gate in the input line for each bit of the second number B, to carry out the complementation operation.

The result that we get after we have applied the NOT operation to our number is called the "one's complement". We'll see next month when we come to discuss "sign bits" that "one's complement" is an alternative method for representing negative numbers. Now, to get the "two's complement" of the number, we have to add 1 – exactly as we did in step 2 of our example.

We could carry out this addition with our full adder in a two-stage process, first adding our numbers 101 and bit-wise **NOT** 100 (011 – that's the "one's complement") and then feeding the sum of this addition back through our full adder along with the number 1. However, now that we've modified the first stage of our eight-bit full adder by replacing the one-bit half adder with a full adder, this can all be easily carried out in a one-step process. All that we need to do is set the third input of the first stage (C^{IN}) to 1 and, hey presto, we've constructed a functional arrangement of logic gates that will serve to perform subtraction.

If you care to refer back to last month's feature you'll be able to check that our eight bit full adder modified for subtraction is now constructed using 112 of our basic "building block" logic gates – 24 OR gates, 40 NOT gates and 48 AND gates.

You'll see that the array on page 60 is the eight-bit full adder from last month, but now modified to perform subtraction. We have used the same two numbers – 10011001 (decimal 153) and 1011011 (decimal 91) – as we did last month, but instead of performing addition with them we're now using the method of two's complement subtraction to give us the result 111110 (decimal 62), which happens to be correct.

HARD SUMS WITH MULTIPLICATION AND DIVISION

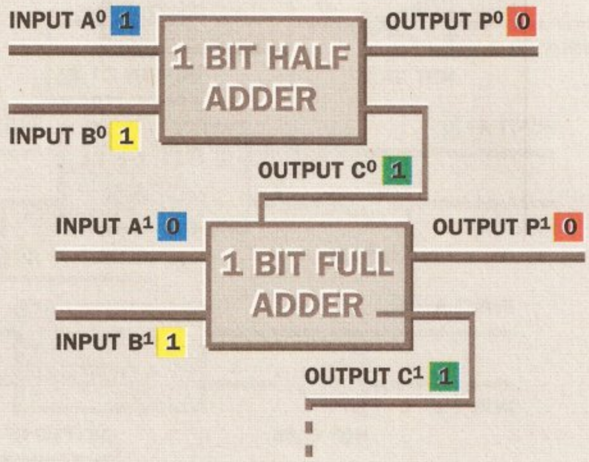
Right, we've now explained the functional logic assemblies that are required to carry out the two most basic of the arithmetic operations – addition and subtraction. We're not going to devote the same amount of space to discussing the more complex mathematical processes of multiplication and division, but we will just explain briefly how these are tackled by the internal circuitry of the microprocessor.

First let us deal with multiplication. In the earliest generations of digital computers their full adder assemblies were re-utilised to perform multiplications. They would treat a sum such as 6 multiplied by 6 as a series of five additions – 6 + 6 + 6 + 6 + 6. That's a perfectly reasonable approach and both methods yield the same result. However, this approach has the disadvantage of being slow, so these computers also employed a number of tricks or "optimisations" to reduce the number of additions that had to be performed. For example, when we are multiplying the numbers 6 and 6 it's not actually necessary to perform a chain of five additions, adding 6 each time – three additions are sufficient. First we add 6 + 6 to give 12. Then we add the result of this first sum, 12, and another 6 to give 18. Finally we add this result, 18, to itself to give us the final result, 36.

Nowadays, microprocessors rely on a different approach that employs what are called "shift registers". They do this because all but the most trivial of multiplication sums can be performed more speedily by the technique of shifting than by

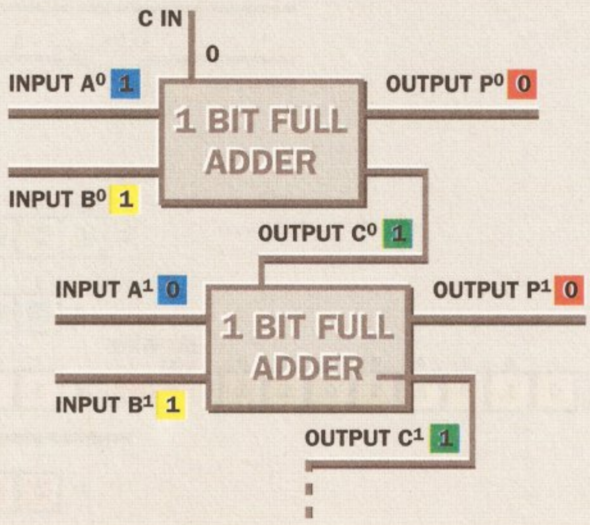
TOP UNITS OF ADDER

When we explained the eight-bit full adder last issue (see page 116 to order a copy if you missed it), we used a one-bit half adder for the first step in the chain. We did this because for the first step in the addition there is no "carry in", so we could get away with a smaller number of gates, six rather than the 13 required to construct a one-bit full adder.



MODIFIED ADDER

If you followed the principles behind last month's discussion of the one-bit half and full adders, it should be clear that we could equally well have substituted a one-bit full adder instead of the half adder for the first stage of our cascade – provided that we set the "carry in" bit to be 0. That is in practice the way that multiple digit adders are constructed in electronic components. Why? So that much of the circuitry can be re-used for other operations. For example, by adding a set of eight NOT gates and changing the "carry in" bit on the first stage to 1, you get the correct logic gate array for performing subtractions.



employing multiple additions.

To use an example, we know that if we take any decimal number, say 28, we can quickly multiply it by ten by just "adding a nought" to the end to give us 280. We can adopt a parallel approach when working with binary numbers. Take 11100 (decimal 28). "Adding a nought" to the end (this is described in technical jargon as the process of "shifting left") gives us 111000 (decimal 56) – that's equivalent to multiplying by 2. By combining a series of shift left and add operations it's possible to perform any multiplication sum.

So, now let's see if we can debunk division for you. Again this is performed using shift registers – but in this case we have to shift the number in the other direction, to the right. This is equivalent to moving the decimal point when you're working with base ten numbers So 11100 (decimal 28) shifted right by one digit position gives us 1110 (decimal 14) – we've divided by two. By using a sequence of shift right, compare and subtract operations, the MPU is able to cope with any division.

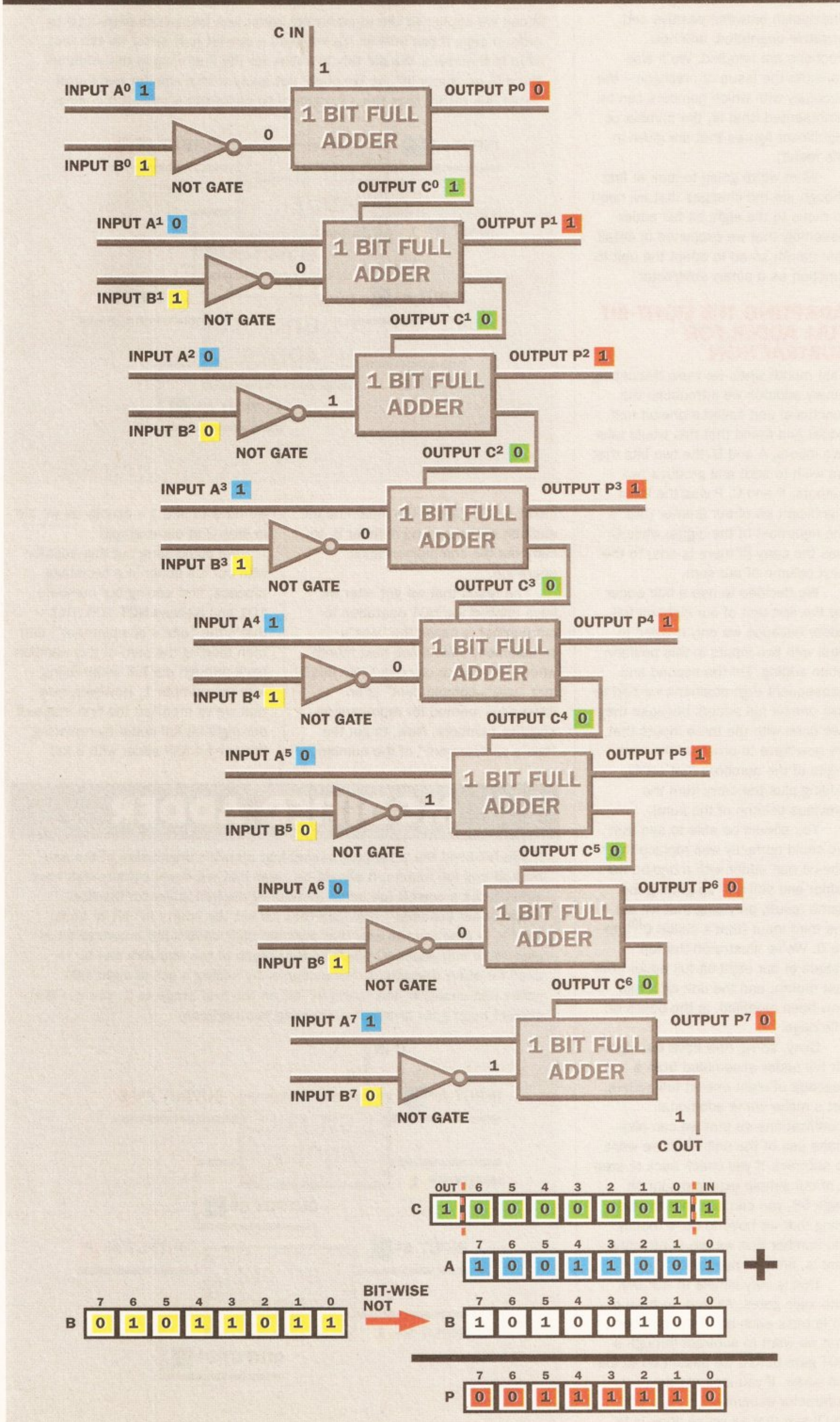
NEXT MONTH

Okay, if you've been following this and last month's features you will now have a good grounding in the principles that are used for designing digital logic circuits. If you want to try some "hands-on" experimentation with logic, then make sure that you get your hands on a copy of the freeware program *DBB (Digital BreadBoard)*. This is a very clever little package which enables you to design and dry-run your own simple logic circuits. It's being distributed on Fish Disk 844 and if you turn to page 109 you'll see that our PD aficionado Ian Wrigley rates it highly with a star review, awarding the program 10 out of 10.

No doubt you've now had your fill of logic, so next month we'll be moving on from the theoretical side of digital logic to see its practical implementation inside the 68000 microprocessor.

We'll be taking a look at the way that numbers are represented internally in your Amiga and how these numbers are coded to represent other information – such as text. We'll then be discussing the "registers" (such as the shift register that we touched on when talking about multiplication and division) that are used to manipulate this data, and the various conventions that are employed when it comes to moving it about – that's the process of "addressing". So if you want to be properly addressed – and if you want to find out more about what goes to make the heart of your Amiga beat – then don't miss it. AS

ADDER MODIFIED FOR SUBTRACTION



The Pest is back

This month, Mark Smiddy brings you the full low-down on Pest 3, proving it's at least as much fun to pull it apart as to run it...

Pest is probably the most powerful and comprehensive time-scheduling utility yet devised – but what makes it special, and what will make other computer users pale, is the fact the whole thing is written in AmigaDOS. There are no clever assembly-language cheats, no hidden utilities: everything is handled by the Amiga's own DOS language. That also means it's a lot smaller than anything you could reasonably buy off-the-shelf. And it's yours on this issue's *Amiga Shopper* cover disk.

Pest can handle an almost unlimited number of "events" and is accurate to within a couple of seconds of the computer's own clock – depending on processor load. It is fully multi-tasking and works quietly in the background until it's needed. Memory requirements are frugal – each running event takes only a couple of K. Once active, it will flash a message on the Workbench even if other applications *(DPaint, Wordworth* – whatever they may be) are running. Being disk-based, it is totally reset-protected – the events are set every time the machine is started.

You may set an event (reminder, or alert) to trigger on any day, days, date, or dates, at a specified time or a set time after the last reboot. For example, you can set any event to happen at specific times on days of the week; at weekends only; every day in a specific month, and so on. Typical uses include: birthdays, regular appointments, TV programs – the list of possibilities is limited only by how full your social life is.

Now the less-good news: *Pest 3* will work on any Amiga with Kickstart, Workbench 3 and a real-time clock. Amazingly, Commodore did not supply an RTC with the A1200, so unless you have bought one separately, *Pest* will be of limited use. (It still works, but only the instant and delayed events are workable.) The nature of the program means a hard disk is recommended but not required.

Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

I can imagine a lot of readers spitting teeth and demanding to know why this all-time best is AmigaDOS 3 only. The reason is simple: AmigaDOS 3 has a new command which is crucial to *Pest* and implementing it in AmigaDOS 2 is technically quite tricky. It is possible to write such a utility **(RequestChoice)** in assembler or C, but that rather defeats the object. Demand arising, I will fix this – but for now, here stands *Pest 3,* batteries not required.

> "probably the most powerful... time-scheduling utility yet devised"

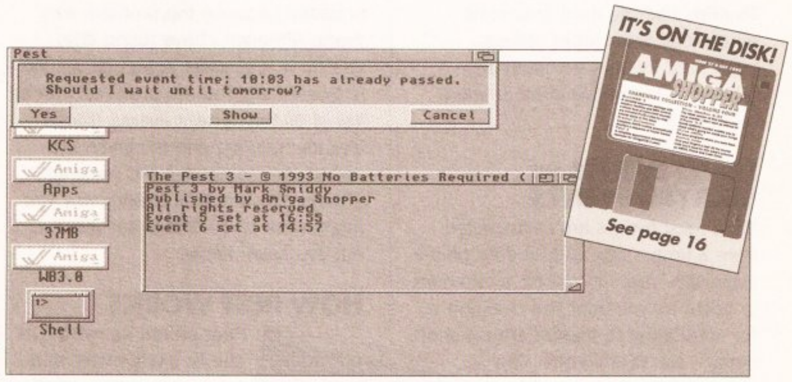
STARTING PEST

The archive utility used to compress *Pest* clears the script flag required by these programs. A utility is provided to fix this problem and should be used once only. After un-archiving, the entire **Pest3** drawer should be copied to your Workbench disk. You activate *Pest* by dragging the **"StartPest"** icon to your **WBStartup** drawer and re-booting the machine. After that, you can just let *Pest* do the rest. The program is like an alarm clock – which means you must remember a couple of things:

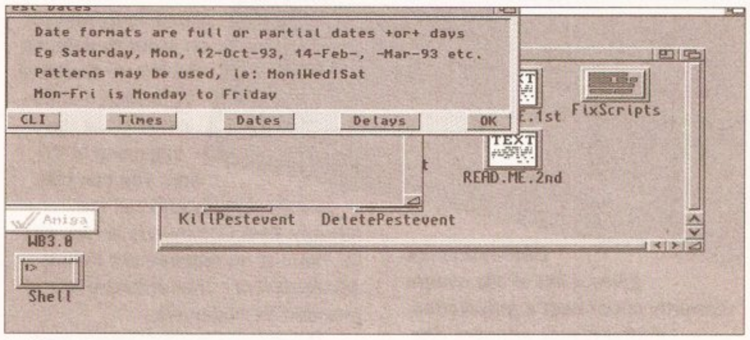
- It does nothing unless told to.
- You have to be around to hear it.

The second point cannot be stressed strongly enough. *Pest* is intelligent enough to spot when you miss an appointment time on a specified day – but the machine *must* be used on that date. This is just like an alarm clock – if you're too fast asleep to hear it or not there when it goes off, you'll be late for work just the same.

To get going, just double-click on the **AddPestEvent** icon and select "Start". *Pest* will ask you what it needs to know – the sequence of prompts is defined by exactly what the event will do. The most important input, and the only one *required* from you, is what message *Pest* will display when the event occurs. You will then be given a choice of days, dates, times or delays. Note that in this version CLI options are *not* supported.



The **Pest** *system starting up at the beginning of a session – fully automated once* **StartPest** *has been added to the WBStartup drawer. Not how in this case an event has already passed, and a requester appears to tell the user so.*

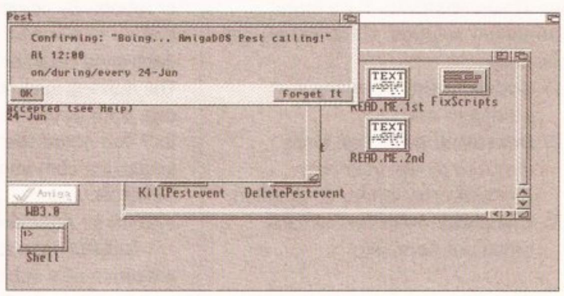


AddPestEvents*, which is used to inform* **Pest** *of any new events about which you need to be reminded, has a comprehensive interactive help system. Here it is describing the acceptable formats for dates that it understands.*

The message can be any string of text, although around 60 characters is about the maximum. However, there's no reason why you shouldn't use the message to remind you to view a longer note about that particular event. Times and dates need more explanation. *Pest* can accept times in 12 or 24-hour format and recognises the difference by the presence of AM/PM in the string. For example: **1:00** and **1:00am** are the same thing, just as are **1:00pm** and **13:00.** The 24-hour method means you have fewer characters to type, but it's entirely up to you.

Dates and days are more complex, although you only have to use them if you want to specify an event for some particular day. Basic dates are simple. For example, if you have a dental checkup on 23 July 1993, you'd have to set an instant event (no time) dated as **23-Jul-93.**

More regular occurrences (such as birthdays and anniversaries) are entered similarly, but without the year. *Pest* just registers the date and the month: **23-Jul** would define a single dated event every 23rd July regardless of the year – birthdays



Pest *uses a requester to confirm that everything's okay before a new event is added to the list.*

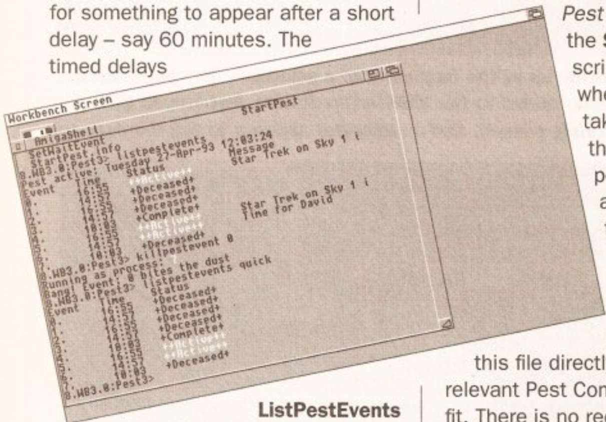
and that sort of thing are good candidates for this event. This technique can be extended to cover every day in a month, such as **Jan.** Months and dates can be grouped using the bar (|) character – this is explained for days below.

Now let's imagine you have to

pick the kids up at 3:00 every weekday and it takes you ten minutes to get to school. You might set the event day as **Mon-Fri.** *Pest* recognises this special string and enters the string: **Mon|Tue|Wed|Thu|Fri.** Specific days should be entered as three-letter strings, separated by bars if necessary – otherwise the entire week is taken as default.

TIMED EVENTS vs DELAYED EVENTS

Most *Pest* events are constructed from a time + day and/or date plus a message. You can opt for a reminder to occur as you boot the machine or for something to appear after a short delay – say 60 minutes. The timed delays are useful to remind you to take a break, although a reset is required to re-trigger them.



ListPestEvents ***gives a list of the events currently under* Pest's *jurisdiction.*** **KillPestEvent** ***removes one.***

Four other Workbench-compatible utilities are supplied. (Other scripts present in this drawer are used by *Pest* and reserved for AmigaDOS proper – see below for details.) The utilities are:

• *ListPestEvents:* used to list the current events and their status. Note this utility only affects *running* events scheduled for that day. They can be reset by re-booting the machine – see *DeletePestEvent* for a more permanent solution. Three states are possible:

(1) **Active:** event is running and waiting to execute.
(2) **Deceased:** event has been removed by the user (with *KillPestEvent)* before completion.
(3) **Complete:** event has already timed out normally.

• *KillPestEvent:* used to remove any running event from the system list before it has completed. This script lists all the current events (and their status) and will prompt you for the number of the one to remove. If no number is supplied the script exits.

• *DeletePestEvent:* permanently removes *any Pest* event from the system and should be used with care. It works along similar lines to *KillPestEvent* but this one actually lists the main **"Event"** script **(Pestfile).** Enter the number of the line to remove or "0" to escape.

• *ChangePest Message:* was provided because the problem was there. Although I have found little use for it, I suspect someone will like it. Essentially you are provided with a list of all the current events (those already running) and are given the opportunity to change the message attached to any one. Exactly why you might want to do this is beyond me, but you never know.

HOW PEST WORKS

Pest stores its events in the **S:** assignment in a script titled **"Pestfile",** where every event takes a single line in the file. You can permanently remove an event by deleting the line or disable it by placing a semi-colon ";" at the beginning of the line. You can edit this file directly and call the relevant Pest Commands as you see fit. There is no requirement to use *AddPestEvent* – that software is provided for beginners.

The system is constructed from a hideously complex set of AmigaDOS algorithms – but just four simple commands are central to the operation of the entire system, and only one of those is specific to AmigaDOS 3. *Pest* keys on dates, days and times shown by the **DATE** command like this:

```
1>date Monday 19-Apr-93
10:57:03
```

Provided your machine has a battery-backed real-time clock, this date will be correct every time you switch on or reboot. By comparing the date portion to a known date, *Pest* can determine whether to set an event. The burning question is: how can any day, date or combination be tested for? The entire test is performed in a single-line command based on **SEARCH:** and this is what makes the system so powerful.

SEARCH can test for the presence of a sub-string within a file and report on its findings. Let's see this in action:

```
1>SEARCH S:SPAT FAILAT
  8 FailAt 21
18 FailAt 10
```

The command displays the line or lines the string was found on and also their line numbers.

You don't have to specify a full word of course:

```
1>SEARCH S:SPAT FAIL
  8 FailAt 21
12 IF NOT FAIL
18 FailAt 10
```

As you can see, an extra line also containing the string **"FAIL"** appears. This is fine when used from a Shell, but useless when used in a script. Someone thought of that, and **SEARCH** returns an indication, in the system variable **"RC",** to say whether the string was found or not. Here is an example run:

```
1>SEARCH >NIL: S:SPAT FAIL
1>GET RC
0

1>SEARCH >NIL: S:SPAT FUDGE
1>GET RC
5
```

In the second instance, the string **"FUDGE"** could not be found in the file, so **SEARCH** sets the variable **RC** to **5.** (This variable can be easily tested and acted upon with **IF.)**

Now how about our dates? The date itself can be easily written to disk like this:

```
1>DATE >DateFile
```

The **">"** is a re-direction operator – it takes everything that would normally be displayed on screen and writes it to a named file – **"DateFile".** Ordinarily this file would be written in the RAM disk **(T: assignment)** but to avoid confusion just take that for granted at this stage.

We can now use **SEARCH** to quickly test if the requested date is present in the date file like this:

```
1>SEARCH DateFile "2-Jun-93"
```

If the date is the 2nd June, **SEARCH** returns **RC=0** (OK) otherwise it returns **RC=5** (WARN). Simple enough, but remember how **SEARCH** does not differentiate between words and parts of words. What would happen in this case?

```
1>SEARCH DateFile "Jun"
```

The search is true if any part of the date contains the word "Jun", or, as *Pest* sees it, the date is *any* day in June of *any* year. Exactly the same method can be applied to days of the week too:

```
1>SEARCH DateFile "Monday"
```

This search will return a true value (OK, **RC=0)** whenever the day name is Monday and a false one (WARN, **RC=5)** at any other time.

Now for the 64-million-dollar question: what happens when an event should be scheduled for more than one day or date? The immediately obvious solution is to set an event for each day required – but this is wasteful. **SEARCH** offers a less obvious, but far more elegant answer: pattern matching. The special bar character "|" (pronounced "OR") solves this. In longhand, if you want an event to activate on a Monday, Wednesday and Friday, this would reduce to: "Mon OR Wed OR Fri" and further reduce to its AmigaDOS equivalent, **"Mon|Wed|Fri"** thus:

```
1>SEARCH DateFile ☛
"Mon|Wed|Fri" PATTERN
```

Note that the **PATTERN** switch used on the command line in this example tells **SEARCH** to interpret the string as a pattern) rather than a literal.

All of this translates into a few lines of code which introduce the *SetPestEvent* and *SetWaitEvent* scripts and quickly determine

PEST COMMANDS

The following is a list of the *Pest* system commands and what they do from Shell.

• AddPestEvent [Private]....
This command is used to simplify the entering and construction of the *Pest* events. If it is called from Shell, you should not supply any arguments. (This is a bug.)

• ChangePestMessage [Event] ☛ [Message]
This command can be used to change the message attached to any running event. If executed without arguments it will list the current events and prompt for the information it needs. If the Event number is supplied, the script will prompt for a message. Example:

```
1>ChangePestMessage 1 "Time ☛
for bed!"
```

• DeletePestEvent [private]...
This script is designed to be used from Workbench but can be used from the Shell in interactive mode. It takes one argument, the event number to delete. Caution: this effect is permanent and cannot be undone. For example:

```
1>DeletePestEvent
```

• FixScripts <none>
This function is provided to set the

whether or not to bother with a specific event. Here is the actual code segment:

```
1. if {day} not eq ""
2. date >T:TPToday
3. search >NIL: t:TPToday ☛
"({day})" pattern
4. if warn
5. skip out
6. endif
7. endif
```

Now here is how it works:

1. **{Day}** is an optional argument supplied by the user as defined above which carries the day(s) *or* date(s). This test determines if an argument has been supplied by checking if **"{day}"** and **""** are *not* the same. (AmigaDOS pre-parses every script by replacing every argument name with any values supplied for it.) Two possible ways this line can be expanded are:

```
A: if not eq ""
```

or alternatively:

```
B: if Mon|Wed|Fri not eq ""
```

IF is a conditional test. When such a test evaluates to TRUE, execution continues at the next line (Step 2 here). If, on the other hand, the test returns FALSE, execution jumps to the matching **ENDIF** (Step 7 here). In this first case, things are slightly more complex because the test is reversed by "NOT". The unknown string on the left is compared for inequality to the empty string on the right: Test A evaluates FALSE; B evaluates TRUE.

Constructs such as this are very complex to get to grips with at first unless you have some prior knowledge of programming, so we'll return to them later on.

2. This sends the current time and date to a temporary file. The name is arbitrary, but use of the **"T:"** assignment ensures the file is written to RAM for speed.

3. Here is the practical version of the search described earlier. Although this line looks complex, all that has been added is the day/date argument collected from the command line. When AmigaDOS expands this it might look like this:

```
search >NIL: t:TPToday ☛
"(Mon|Wed|Fri)" pattern
```

(Brackets and quotes are added here to prevent the command becoming confused if the date argument contains spaces.) If the date file, **TPToday,** contains one of the substrings Mon, Wed or Fri, **SEARCH** will returns OK; otherwise it will return WARN.

4. Checks if **SEARCH** set the WARN flag – the date/day substring was *not* located in today's date. If WARN was found, execution continues at Step 5; otherwise it jumps to Step 6.

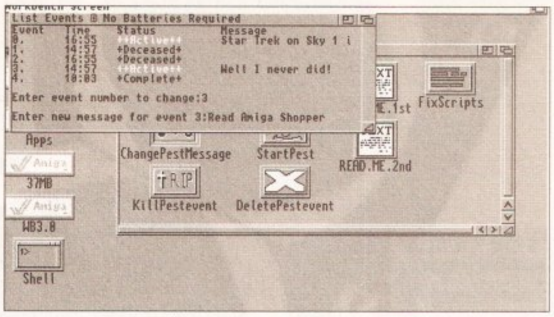
5. Immediately transfers control to the end of the script (not shown here). Steps 3 and 4 determine if the date is valid, and if not, this step exits the program to save time.

6. Marks the closing point for the **IF...ENDIF** construct at Step 4. Execution continues at Step 7.

7. Closes the first **IF...ENDIF** construct at Step 1 and allows execution to continue with the remainder of the script.

TIME SYSTEMS

With the dates taken care of, there is something else that can affect a *Pest* event: time. Most events are set to appear at a specific time, but it is possible that the time has already passed when the machine is booted. Here's the fragment which determines this:



***ChangePestMessage**, running here, can be used to change the message displayed when an event occurs.*

```
1. date >env:TimeNow{$$}
2. echo to T:EdTime "2(dta/ ☛
/);pa/:/;pb/:/;3#"
3. edit env:TimeNow{$$} ☛
with T:EdTime
4. if $TimeNow{$$} GT "{Time}"
5. RequestChoice >env:RQ☛
{$$} "Pest" "Requested ☛
event time: {time} has ☛
already passed.*nShould I ☛
wait until tomorrow?" "Yes" ☛
"Show" "Cancel"
```

Here's how this works:

1. Writes the date and time to a global environmental variable.

2. Constructs an **EDIT** macro to extract the time from the current date. This is quite involved, so let's examine it in more detail. The actual macro file can be split into separate commands like this:

```
2(dta/ /)
pa/:/
pb/:/
3#
```

Now recall how the date is actually written:

```
Monday 19-Apr-93 10:57:03
```

The first part of the macro deletes everything up to the time by searching and deleting everything up to the second space inclusive. This leaves us with:

```
10:57:03
```

Next the edit "pointer" is placed after the colon in hours and before the colon separating the minutes and seconds. If this seems odd, it's just the way **EDIT** works. Finally the second colon and the last two digits are deleted, leaving us with:

```
10:57
```

3. Edits the variable **TimeNow{$$}** directly using the macro just described.

4. Compares the requested event time to the actual time. This test returns TRUE if the event time is less than the actual time – in other words if the time has already passed.

5. If the test at Step 4 is true, this presents a requester indicating what has happened and provides some options as what to do. The user's response is sent to a variable which is made use of later in the script (not shown here).

Next month we'll continue exploring the workings of *Pest.* AS

"S" protection flags on all the *Pest* functions. It only needs to be run once from Workbench and can be deleted afterwards.

• GetArgs <Name> [private]...
This is a private function used by the *Pest* system to retrieve an input line from the user. Everything is taken in up to the carriage return and the result is passed back in a local variable **Arg<Name>,** where **<Name>** is the name supplied at run time. Remaining command line options are private to the script.

• KillPestevent [Event] ☛ [Message] [Private]
Removes a current running event from the list. This command is designed to be used from Workbench and may be used without arguments to trigger its interactive mode. The **Message** argument is reserved for use by the *Pest* system although you can supply one if you wish. When an event is removed, the **"++Active++"** string is replaced by the contents of the message argument. In any case, when *KillPestEvent* terminates an event, it echoes the process slot used (check STATUS). Examples:

```
1>KillPestEvent 1
Running as process:10 Bang!
Event 1 bites the dust

1>KillPestEvent

Pest active Monday 27-Apr-93
11:30:23
Event Time Status Message
0. 12:59 ++Active++ Time for
lunch!!
1. 14:47 +Deceased+
Enter event number to delete:
```

• ListPestEvents [QUICK]
This function is provided to list information on all the current events. The **QUICK** switch is available from the Shell only and is used to suppress the date heading and message output.

• SetPestEvent [Time=<time>] ☛ [Day=<day|date>] ☛ [Message=<"x">]
This command sets the normal time/date events and is normally executed from a startup script. You can, however, call it directly to set an immediate event which does not require a re-boot. This command is stripped-down for speed and times should be entered in 24-hour clock *only.* If the message contains spaces it should be surrounded with quotes.

You can use this command with care to add events directly to **S:PestFile** if you wish. Example:

```
1>SetPestEvent Time=13:00 ☛
Message="Time for a break"
```

• SetWaitEvent [Time=<delay>] ☛ [Day=<day|date>] ☛ [Message=<"x">]
This is the same as *SetPestEvent,* only the time is a delay in minutes. Example:

```
1>SetPestEvent Time=5 ☛
Message="Five minutes have ☛
elapsed…"
```

• StartPest <none>
This command is provided to start the pest system and should only be executed from the WBStartup drawer by dragging its icon there.

It's alive!

In the final part of our epic series on chaos theory, Conrad Bessant explains how fractals can be brought to life using the animation capabilities of AMOS.



See page 16

There is no doubt that the bizarre patterns and psychedelic colours exhibited by fractals have played an important part in the popularisation of chaos theory. However, no matter what the subject matter, a still image is no substitute for the real thing. Of course fractals don't exist in the real world – the nearest you can get to seeing a real live fractal is by using animation. With the help of an Amiga and AMOS, fractal animation becomes simple, and you can soon be creating the kinds of effect you're used to seeing in rave videos on *The Chart Show* or MTV.

So far in this series we've been using GFA BASIC or Amiga BASIC because their syntax conforms well to general standards, making conversion to other languages very easy. However, implementing the high-speed graphical operations required to produce animation is very difficult in these languages. It is therefore more sensible to use AMOS in this instalment, because it has a vast array of built-in commands which are ideal for fractal animation.

As you will have found if you have tried out any of the example programs from this series, fractals of any type take some minutes to plot. This obviously makes it impossible to animate a fractal by completely re-drawing it in real time. It is therefore necessary to employ techniques which make use of pre-drawn fractals. Two such techniques, colour cycling and screen switching, are explained here. Both techniques can be applied to a wide variety of fractal types.

COLOUR CYCLING

The easiest way to animate a colourful fractal like the Mandelbrot or Julia set is to use colour cycling. This is basically the rapid changing of the colour assigned to each colour index. Implementing this technique in AMOS is extremely easy – all you need to do is plot a Julia set with coloured contours and then invoke the **SHIFT UP** or **SHIFT DOWN** command. The AMOS program given in listing 1 – and on this issue's cover disk – does this. The speed of the colour cycling can be changed by changing the value of the speed variable at the top of the program.

In other languages the **SHIFT UP** and **SHIFT DOWN** commands are not available, so it is necessary to implement clones of these commands which perform the same job. Most languages include some way of changing the colour associated with a particular colour index, so it is just a case of using this facility in a loop involving all colours.

SPEED FREAK

The actual Julia plotting part of the program in listing 1 works in a very similar way to the Julia set plotter given in *AS* 23, except that this time the code is in AMOS. Also, this listing employs one of the many speed-saving tricks found in the better public domain fractal generators.

The trick makes use of the unusual symmetry of Julia sets, which is best explained by analogy. Imagine plotting a Julia set onto cellophane, and then cutting it vertically into two exact halves. If one half is then turned back to front and upside down, it will look exactly the same as the other half. Listing 1 uses this symmetry by only calculating half of the points on the Julia set, but plotting the calculated points twice, once on each side of the set. The best way to understand the listing is to load it into AMOS and watch it at work.

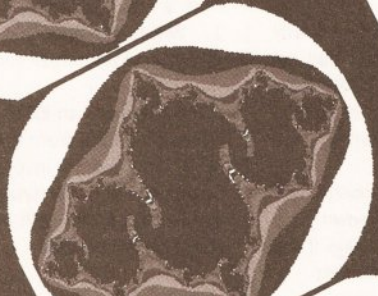
The great disadvantage of this speed saving method is that it will only work on full sets, not on magnifications of sections of a set. This is because there is not necessarily any symmetry in such magnifications.

Of course listing 1 could have used AMOS's powerful sprite grabbing and flipping commands. This would have meant that it would only be necessary to plot the left hand side of the set and then grab that as a sprite, flip it horizontally and vertically and then place it next to the original half. However, this kind of advanced AMOS programming is best left to the AMOS section of the

0

1

2

3

4

5

6

7


TABLE 1

The animated sequence in numbers

Frame	*a*	*b*
0	–0.5	–0.11
1	–0.6	–0.11
2	–0.7	–0.11
3	–0.8	–0.11
4	–0.9	–0.11
5	–1.0	–0.11
6	–1.1	–0.11
7	–1.2	–0.11

LISTING 1

```
SPEED=4
'
Screen Open 0,320,200,16,Lowres
Palette 0,0
Flash Off
Hide
'
A#=-1.05
B#=-0.11
'
For X#=-2 to 0 Step 0.0125
  For Y#=-1 to 1 step 0.01
    P#=X#
    Q#=Y#
    ITERATION=0
    While P#*P#+Q#*Q#<4 and ITERATION<33
      PNEW#=P#*P#-Q#*Q#+A#
      QNEW#=2*P#*Q#+B#
      P#=PNEW#
      Q#=QNEW#
      Inc ITERATION
    Wend
    Ink ITERATION mod 16
    Plot 160+X#*80,100-Y#*100
    Plot 160-X#*80,100+Y#*100
  Next Y#
Next X#
'
Shift Up SPEED,2,15,1
```

magazine. (If you're interested, write to the editor and ask him to cover this in the AMOS column!)

SCREEN-SWITCHING

Colour-switching is certainly an easy way to animate fractals, but this ease of implementation has made it a standard feature in most fractal generators. Much more impressive and unusual animations, involving changes in the actual shape of the fractal, can be created with only a little more effort using screen-switching. This is just like a high-tech version of a cartoon flip-book. First you prepare a series of pictures, called frames, which make up an action sequence. You then flip through them in sequence to create the impression of movement.

In AMOS you can open up to eight screens at once, which means you can have eight full-screen frames of animation. This may not seem like a lot, but it is still enough to produce a very impressive display. However, the problem is in determining how a Julia set can be subtly deformed to generate a series of frames which are similar enough to create a smooth animation. How you do this is really a process of trial and error, because there is more than one way to animate a Julia set. By way of example we'll use a method where the horizontal component *(a)* of the initial position of the point in the Mandelbrot circle, which determines the shape of the set (see *AS* 21 and 23 for details), is reduced by 0.1 in each successive frame. Starting with a set where $a = -0.5$ and $b = -0.11$ we get the sequence in table 1.

This sequence is shown pictorially on page 64. Clearly the sequence is not cyclic – when we reach frame 7 we can't go straight back to frame 0. To get back to frame 0 smoothly, we have to go backwards through the whole sequence. The entire process, from frame 0 to frame 7 and back to frame 0, can then be repeated indefinitely, creating a never-ending smooth animation.

Putting all this into practice in AMOS is not difficult, although the initial plotting of eight Julia sets is necessarily time-consuming. A great deal of time can be saved on repeats of the animation by saving all eight frames to disk when the program is first run and simply loading them, rather than plotting them, onto the eight screens whenever the animation is repeated.

So that you can get an idea of the scope and techniques of fractal animation without the tedium of waiting for the sets to be plotted, full screen IFF format plots of all the sets in the sequence in table 1 are provided on the cover disk. They are saved under the names **JuliaFrame 0** through to **JuliaFrame 7.** An AMOS program to load these into memory and then cycle through them at a reasonable speed is also provided, under the name **JuliaMovie.AMOS.** A listing of JuliaMovie.AMOS (with comments omitted to save space) is given as listing 2, to show how the animation is achieved.

Thanks to AMOS's convenient command names, most elements of this program are self-explanatory. The first **FOR... NEXT** loop opens the eight low-resolution screens and loads the correct Julia set onto each one using the **LOAD IFF** command. The **HIDE** command is then used to hide the mouse pointer and the **REPEAT... UNTIL** loop is invoked. It is this loop which actually cycles through the sets in the right order at the right speed. The **WAIT** commands in this loop are vital – without them the animation would just be too fast.

> **"Screen-switching is just like a high-tech version of a cartoon flip-book."**

Note that having all these screens open at once uses a lot of memory, so you may not be able to run this program on a 512K Amiga or on other Amigas with a number of accessories or multi-tasking programs loaded.

Even though listing 2 is limited by the pre-drawn animation frames stored on the disk, there is still a lot of scope for experimentation. Colour cycling could be added, and the speed of the whole animation can easily be changed by altering the value assigned to the speed variable at the head of the program. Since the program is in AMOS you could even add your own sampled soundtrack.

If you are prepared to forget about the frames given on disk and produce a sequence of your own, then the scope for experimentation widens considerably, since there are many different ways in which the Julia set can be altered for each successive frame. For example, a different range of values for a could be used, or the value of the vertical component *(b)* of the starting point in the Mandelbrot circle could be changed as well as, or instead of, *a*.

OTHER FRACTALS

The emphasis in this article has been on animation of Julia sets. This is because, from the feedback I have received from this series, these still seem to be the fractals which people find most interesting. Obviously the only fractals that can make direct use of colour-switching are colour ones, of which we have only met a few. However, almost all fractals can take advantage of some kind of screen-switching. For example, the Lorenz attractor can be plotted in three dimensions and rotated. Eight frames is not really sufficient to produce a smooth rotation of the attractor through 360°, but a rotation of about half this is just possible. The difficulty here is the plotting of the attractor at different angles of rotation in three dimensions on the Amiga's two-dimensional screen, because it requires a reasonable understanding of three-dimensional mathematics.

WHAT NEXT?

Chaos is just one small facet of the wider activity of "recreational programming". This is the name given to a loose array of amateur semi-scientific programming activities that don't usually result in any practical application, but can still produce some very interesting and educational results. Other areas of recreational programming include cellular automata, which is based on the simulation of an imaginary colony of bacteria cells. The latest offshoot of cellular automata is artificial life, where the aim is to produce self-replicating "creatures" within the computer that evolve, feed and die just like real creatures. Other areas of recreational programming have their professional parallels – for example artificial intelligence manifests itself recreationally as simple conversation programs, and in the real world it has found uses in route-planning and problem-solving. Environmental simulations have also leapt from the world of recreational programming to the world of professionals in recent years.

> **"Self-replicating 'creatures' that evolve, feed and die just like real ones."**

And as demonstrated in this series, the Amiga's processing power and its wealth of facilities make it an ideal machine for exploring the whole field of recreational programming. Creating chaos on your Amiga is only the beginning!

• Well, that's the end of this series – if you have missed any earlier instalments (the first was back in *Amiga Shopper* 18), turn to page 116 for our back issue service. AS

LISTING 2

```
SPEED=5
'
For N=7 To 0 Step -1
  Screen Open N,320,200,16,Lowres
  Palette 0,0
  Flash Off
  Load Iff "JuliaFrame"+Str$(N)
Next N
Hide
'
Repeat
  For N=0 To 7
    Screen To Front N
    Wait SPEED
  Next N
  For N=6 To 1 Step -1
    Screen To Front N
    Wait SPEED
  Next N
Until False
```

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AMOS action

This month Jason Holborn brings you some hot news and shows you how AMOS Pro's powerful Interface language can be used to write some quite complex requesters.

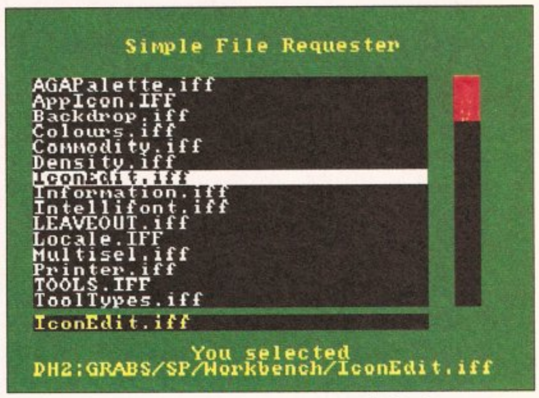
After last month's look at AMOS Professional's ActiveLists and Scroll gadgets, no doubt you've probably already started to appreciate the power that Interface delivers. Before the arrival of AMOS Professional, application programmers were forced to handle the drudgery of creating and maintaining user interfaces themselves. Now, with Interface at your disposal, you can create some very complex user interfaces incorporating a whole range of different gadget types with a minimal amount of code and – more importantly – a minimal amount of hassle.

So far we've restricted our look at Interface purely to the odd demonstration program that shows Interface's various gadget types up and running, but we haven't actually created anything particularly useful. This month we'll be putting all that practice to work by creating a fully-working file requester similar to that used by AMOS Professional itself. Many people have voiced concern at the fact that AMOS programs can easily be spotted by users whenever the standard AMOS file requester is used, so here's your chance to get your hands on a fairly usable file requester and learn more about AMOS Professional's Interface language to boot! Can't be bad...

REQUESTIONNAIRE

So how do we go about writing a file requester? Well, the first thing we need to do is to sit down and analyse exactly how the file requester should work and what gadgets will be needed. Our file requester isn't going to be one of those "all-singing, all-dancing" affairs that other programmers boast about – nope, our file requester is a no-nonsense affair that gets the job done. First then, what's the aim of





It may not quite be up to the same standards as Commodore's own ASL file requester, but our file requester offers all the basic functions.

our file requester? Well, that's easy – to allow the user to select the filename of any file on any device without having to resort to typing in complex path strings. Our file requester therefore needs to be as friendly as possible. What's more, let's make it as simple as possible – we won't therefore be including lots of complex buttons that might confuse some users – you can add these in yourself if you're feeling adventurous!

Now we need to decide what gadgets we will need. Well, obviously we'll need an **ActiveList** that will hold a listing of the current directory. We'll also need a scroll gadget that will enable the user to scroll back and forth through the directory listing whenever a directory is read that contains more files than can be displayed on-screen at once. Finally, we'll need a string gadget that will enable users to enter a path string manually should they feel the need. These three basic gadgets should be enough to give us the workings of a usable file requester. Obviously it won't quite be in the same league as

continued on page 74

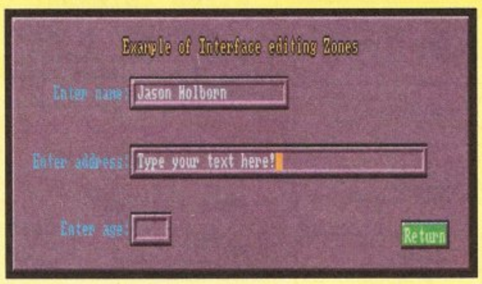
CLOSE TO THE EDit

Along with ActiveLists, scroll gadgets and buttons, AMOS Professional's Interface language offers an additional gadget type – the "text edit zone" – that is specifically designed to handle text. Whereas most gadgets are restricted simply to informing your program that they have been clicked upon, an edit zone can be used to enable the user to pass a text string to your AMOS program. A good example of an edit zone is the fields that you type into when entering a record within a database program.

AMOS Professional's edit zones are created using the **EDit** command, and the syntax is as follows.

```
EDit ZoneNumber, X, Y, Width, Max, ☛
Default, Paper, Pen;
```

The zone number is exactly the same as the zone number parameter that we pass to all other gadget creation commands under Interface. Because we have already created two other gadgets (and have therefore already used zones 1 and 2), we use zone number 3. This parameter is followed by the X and Y parameters that, not surprisingly, define the position of the string



Interface's Edit Zone gadgets, designed to handle text, can be used to create professional-looking front ends for your AMOS programs.

gadget on-screen using the conventional screen coordinate system.

Although the Y position can be any value, the X value must be an exact multiple of 16. If you don't enter an exact multiple, AMOS Pro will do the kind thing and automatically round *down* your value – often with unpleasant results.

Next we have the width parameter that controls the horizontal width of the string gadget. Unlike some gadget types, this is not expressed in terms of screen pixels. Instead, you must state the width of the gadget in terms of characters. For example, passing a value of 20 will give you a string gadget that is capable of displaying a maximum of 20 characters at any one time.

The size of the string gadget doesn't control how many characters the string gadget can hold, though – you could, for example, create a string gadget that could hold up to 100 characters but could only display ten at any one time. This is where the **Max** parameter comes in – the value you enter here controls how many characters the string gadget is actually capable of storing.

The **Default** parameter is used to load the string gadget with a default string. In the case of our file requester, we'll be loading the string gadget with the device name of the default directory (df0:). Although the file requester will not read the directory listing, the user need only press the Return key and the default string is passed back to the main program. Note that the string that is to be used as the gadget's default value should be contained within single quotes ('DF0:Pictures', for example). If you want to leave the string gadget empty when it is first created, just pass a couple of empty single quotes (''). Finally, we have the **Pen** and **Paper** parameters that control the colour of the string gadget.

THE AMIGA SHOPPER READER SURVEY

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4 *Amiga Shopper*	................./10
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9 *CU Amiga*	................./10
10 *Amiga Power*	................./10

For each of these sections in the magazine, would you like to see less, more or the same space devoted to it in future? (Bear in mind you can't have more of everything!)

	Less	Same	More
11 News	a❑	b❑	c❑
12 Letters	a❑	b❑	c❑
13 Amiga Answers	a❑	b❑	c❑
14 Video and Graphics	a❑	b❑	c❑
15 Education	a❑	b❑	c❑
16 Communications	a❑	b❑	c❑
17 AmigaDOS	a❑	b❑	c❑
18 DTP	a❑	b❑	c❑
19 AMOS	a❑	b❑	c❑
20 PD & shareware	a❑	b❑	c❑
21 Competitions	a❑	b❑	c❑
22 C Programming	a❑	b❑	c❑
23 ARexx	a❑	b❑	c❑

Which of these would you like to see in the magazine? (Never, sometimes, frequently or every month)

	Never	Som	Freq	EvMo
24 Single product reviews	a❑	b❑	c❑	d❑
25 Comparative product reviews	a❑	b❑	c❑	d❑
26 Graphics tutorials	a❑	b❑	c❑	d❑
27 Music tutorials	a❑	b❑	c❑	d❑
28 DTP tutorials	a❑	b❑	c❑	d❑
29 Beginners programming tutorials	a❑	b❑	c❑	d❑
30 Advanced programming tutorials	a❑	b❑	c❑	d❑
31 Tutorials based on particular programs	a❑	b❑	c❑	d❑
32 General interest features	a❑	b❑	c❑	d❑
33 Show reports	a❑	b❑	c❑	d❑
34 Foreign news reports	a❑	b❑	c❑	d❑
35 Comms coverage	a❑	b❑	c❑	d❑
36 Book reviews	a❑	b❑	c❑	d❑
37 CDTV & its software	a❑	b❑	c❑	d❑
38 New PC/Mac software for Amiga emulators	a❑	b❑	c❑	d❑
39 Cover-mount booklets	a❑	b❑	c❑	d❑
40 Colour editorial pages	a❑	b❑	c❑	d❑
41 DIY hardware projects	a❑	b❑	c❑	d❑
42 Program listings	a❑	b❑	c❑	d❑

43 How do you rate (out of 10) the usefulness of the cover disk?

................./10

44 Which of the following are reasons why you buy *Amiga Shopper*? (You may tick more than one)
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c○ To find the best prices from advertisements
d○ To learn about my computer and how to use it
e○ For an interesting read
f○ It's cheap
g○ To buy through mail order advertisements
h○ It's the only one with no games
i○ For the cover disk

45 What model of Amiga do you own?

a○ A500	f○ A1500
b○ A500 Plus	g○ A2000
c○ A600	h○ A3000
d○ A1000	i○ A4000
e○ A1200	j○ None

Do you own or intend to buy in the next six months any of the following hardware?

	Own (46)	Intend to buy (47)
Monitor	a○	a○
Printer	b○	b○
Sound sampler	c○	c○
Video digitiser	d○	d○
Genlock	e○	e○
Hard disk	f○	f○
Graphics enhancer	g○	g○
Emulator	h○	h○
Floppy disk drive	i○	i○
Modem	j○	j○
Accelerator	k○	k○
Extra RAM	l○	l○
CD-ROM drive	m○	m○

Do you own or intend to buy in the next six months any of the following software?

	Own (48)	Intend to buy (49)
Word processor	a○	a○
Spreadsheet	b○	b○
Database	c○	c○
Painting program	d○	d○
Drawing program	e○	e○
DTP	f○	f○
Comms program	g○	g○
Sampler/sequencer	h○	h○
Progging language	i○	i○

50 Roughly how much do you expect to spend on hardware in the next six months?
a❑ Nothing
b❑ £1–£99
c❑ £100–£199
e❑ £200–£500
f❑ More than £500

51 Roughly how much do you expect to spend on software in the next six months?
a❑ Nothing
b❑ £1–£99
c❑ £100–£199
d❑ £200–£500
e❑ More than £500

52 What is your age?

....

53 What is your approximate annual income?
a❑ Student grant/at school
b❑ Other under £4,000
c❑ £4,001-£7,000
d❑ £7,001-£10,000
e❑ £10,001-£15,000
f❑ £15,001-£20,000
g❑ £20,001-£30,000
h❑ Over £30,000

54 Does your job largely involve working with computers?
1❑ Yes 0❑ No

The details given in this questionnaire will remain confidential, but if you wish to be informed of special offers and subscription opportunities, please fill in your name and address below.

Name ....

Address ....

....Postcode ....

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Star LC-10	£4.47	£3.06	£6.70
Star LC-20	£4.47	£3.06	N/A
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continued from page 68

Commodore's own ASL requester or even AMOS's sometimes quirky requester.

Right, now let's get stuck into the serious business of coding our requester. Because our file requester will be handled almost completely by AMOS's Interface language, let's start by coding our three gadgets into an Interface program. And, as they say on *Blue Peter*, here's one I prepared earlier... Listing 1.

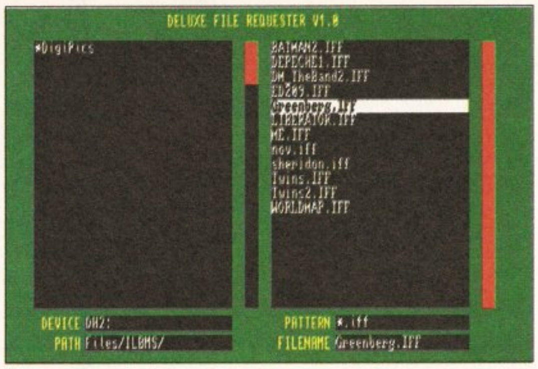
LISTING 1

```
BAse 0,20;
ActiveList 1,16,16,30,15,0VA,0,4,0,3;
  [ZoneChange 3,0VA ZonePosition ARray;]
VSlide 2,272,16,16,120,0,1,5,1;
  [ZoneChange 1,ZonePosition;]
EDit 3,16,140,30,30,'DF0:',0,2;
EXit;
```

As you can see from our Interface program in Listing 1, it starts by offsetting the positions of all gadgets by 20 pixels along the horizontal using the Interface **"BAse"** command. We haven't really covered this command in any great detail before, but it's a pretty simple instruction. Like all drawing operations, it positions gadgets according to an origin relative to pixel position 0,0 within the current screen. Using the **BAse** instruction, however, you can reposition this origin, allowing you to move a whole series of gadgets in one operation without having to manually recalculate the position of each yourself.

Next, our Interface program creates an ActiveList that is capable of holding a maximum of 30 different entries. Okay, so most file requesters handle considerably more than this, but 30 will serve as a nice easy-to-manage figure in the meantime. You can increase this yourself if you so wish – just check out last month's issue for a detailed description of the **ActiveList** command's complex parameter format. (If you missed that issue, turn to page 116 for the *Amiga Shopper* back issues service.)

The most interesting part of the **ActiveList** command, though, is the **[options]** parameter on the next line. As you know, most Interface commands offer an **[options]** parameter which is essentially a section of embedded code that is executed every time the gadget is selected – in the case of our ActiveList, the **[options]** code will be executed every time the user clicks on an entry. In this particular case, we need our ActiveList to automatically transfer the entry that the user clicks on to the string gadget. We could have done this ourselves by having a section of code within the main program that monitored when the user clicked on an ActiveList entry. We would then transfer the appropriate item from the **ActiveList** array (a 30-element dimension array containing the directory listing) into the string gadget using the **"Dialog Update"** command. We can, however, automate this process completely using the section of Interface code in the box to the left.



If you're feeling really adventurous, have a go at writing a fully-featured AMOS Interface file requester. We've provided the basics for you to work from, but we haven't done everything for you!

What it does is to use the **ZoneChange** command to copy the element that the user selected directly to the string gadget by plucking it directly from memory. (Don't forget that the **OVA** variable simply contains an address that points to the position in memory where the **ActiveList** array can be found.) The element that we're interested in is pin-pointed by the **ZonePosition** command, and this holds the number of the **ActiveList** entry that the user clicked on. Clever stuff, eh!

SLIPPERY VSLIDE

The **VSlide** command is then used to create a pretty bog-standard scroll gadget that runs down the right hand side of our ActiveList. It contains a handle (the bit that you drag with your mouse pointer) offering five different positions with a maximum value range of 0 to 29 (don't forget that our file requester only displays 30 entries – remember to change this too if you decide to expand your file requester!). Once again, an **[options]** parameter is added to enable the scroll gadget to inform the ActiveList whenever the user drags the scroll gadget up or down, thus automatically scrolling the ActiveList's contents up or down.

Finally, we have another command that we haven't covered before – **EDit.** As its name suggests, the **EDit** command creates a string gadget – or a "Text Edit Zone", as AMOS prefers to call them. See the separate boxout on this page for a detailed description of this command. Anyway, let's move on by taking a look at the section of code that does the hard work of handling the workings of the file requester (Listing 2).

DOOM OR BOOM? WHAT'S

Life, eh? Funny old world, innit? Would you believe it? Who'd have thought... *(Get on with it – ed.)* Little more than a couple of weeks ago, I was struck down by the sort of gloomy feeling usually reserved for visits from relatives. It all started when I was chatting to a certain well-known AMOS personality – let's call him Mr X. (Names have been changed to avoid embarrassing the guilty.) He said he had heard that Europress were planning to pull the plug on AMOS now that work had started (or was due to start) on PCOS, the PC version of AMOS.

Even software that Europress had already planned to release, Mr X had heard, was supposedly either up for the chop or would be hacked together just enough to make it saleable. Among the packages mentioned was the AMOS Professional Compiler, which my source claimed would no longer undergo the sort of rigorous redesign that Europress had promised.

Instead, the compiler would simply be an extended version of the existing AMOS 1.35 compiler. As for the AMOS Pro AGA extension – well, so convinced was Mr X that this would be killed off that he had actually already started work on his own AGA extension!



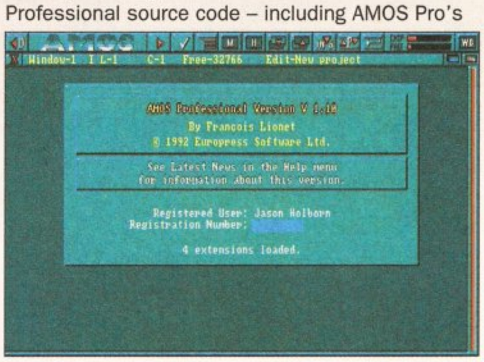
The new AMOS Pro Compiler will produce compiled code that runs considerably faster than the current AMOS 1.35 compiler.

You can imagine how I felt when I picked up the phone to Europress to check the story. I wasn't really expecting them to come totally clean if I had rumbled their little game, but I was expecting some sort of evasive, non-committal answer. To my utter surprise, Europress not only put my mind to rest, but tucked it in and read it a bedtime story by revealing full unadulterated details of both the AMOS Pro Compiler and – wait for it – AMOS Professional 2.0.

PRO COMPILER LATEST

Contrary to recent rumours, Europress are soon to release the long-awaited AMOS Professional Compiler. Although the package was originally pencilled in for a February launch, Europress are now aiming for a launch date of 17 June. Anyway, here's all those juicy compiler-type details you've been eagerly awaiting.

• Compiles Easy AMOS, AMOS 1.35 and AMOS Professional source code – including AMOS Pro's



Look out for the AMOS Professional Compiler and AMOS Pro 2.0 on the 17th of June!

PSEUDO-CODE

```
Loop
  Have any of the gadgets been selected?
  If Yes, then
    Has the ActiveList been selected?
    If Yes, then
      Find out what ActiveList entry was selected
      Is this the second time this entry was selected?
      If Yes, then
        Was a directory selected?
        If Yes, then
                Read directory and redraw ActiveList
        Else
                Set filename to entry
        End if
      End if
    Did the user enter a string into the Edit Zone?
    If Yes, then
      Read string from Edit Zone
      Read directory and redraw ActiveList
    End If
  End If
Until filename has been selected
```

I know what you're thinking – what on earth does it do? Well, the file-requester code looks more complex than it actually is. Most of the code is there to help the file requester get around the limitations of AMOS's **"Dir First$"** command, the instruction that is used to read in the directory listing. Let's make our AMOS code somewhat more readable by converting it into pseudo-code, as in the box above.

As you can see, the file-requester code suddenly becomes so much more readable once it has been translated to pseudo-code. Looking through our code, you may notice that there are some limitations with the requester. Although the ActiveList works exactly the same as any other file requester that you may have used (even double-clicking on an ActiveList entry works!), the string gadget handling is somewhat weak. At the moment, our file requester does nothing more than treat the string gadget as the means for entering a new pathname for the file requester to read. But what happens if the user wants to go back to a parent directory? Well, the simple answer to this is that you can't unless you enter the entire pathname for the directory you want to access.

Also, the string gadget handling code does not distinguish between filenames and pathnames. Even if you decided to enter the filename of the file that you wished to select instead of clicking on it, the file requester would automatically assume that you've entered a pathname. When the file requester then tries to reread the directory, the file requester will crash.

Although the foundations of a very workable file requester are undoubtedly there, there's obviously plenty of room for improvement with our file requester. I'm afraid that I'm not going to do the rest for you, though – that's your job! Try extending the file requester by enhancing the string gadget control code, and you could even add a couple of device buttons that enable the user to select any one of the more common devices (RAM:, df0:, dh0: and so on) without having to enter the pathname manually. Talking of the pathname, you could even split the filename into two separate edit zones – one for the pathname and one for the filename. What's more, the file requester code given here already has the facility to handle wildcards, so you may want to add an edit zone that would enable the user to control what files are read in... Give it a go and see what you can achieve!

LISTING 2

```
Repeat
  DIAG=Dialog(1) : Rem *** Have gadgets responded?
  If DIAG<>0

  Rem *** if the ActiveList responded...

  If DIAG=1
    ACTILIST=Rdialog(1,1)
    If ARR$(ACTILIST)<>""
      If PREV=ACTILIST
        If Mid$(ARR$(ACTILIST),1,1)="*"
                ENTRY$=ARR$(ACTILIST)
                PATH$=PATH$+Right$☛
                (ENTRY$,Len(ENTRY$)-1)+"/"
                _READDIR[PATH$,PATT$]
                Dialog Update 1,1,0,
        Else
                FILENAME$=ARR$(ACTILIST)
                SELECT=1
        End If
      End If
    PREV=ACTILIST
    End If
  End If

  Rem *** If the string gadget responded...

  If DIAG=3
    PATH$=Rdialog$(1,3)
    _READDIR[PATH$,PATT$]
    Dialog Update 1,1,0,
  End If
End If
Until SELECT>0
```

Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

SOURCE CODE

Complete source code for our AMOS file requester can be found on this month's *Amiga Shopper* cover disk.

REALLY UP WITH AMOS

200-plus extra commands. Compiled programs can be run from within AMOS or separately from the CLI or Workbench.

• You don't even need AMOS Professional to use the AMOS Pro Compiler. Yep, you can now write your AMOS code using your favourite ASCII text editor (*EdWord*, for example – it was yours as part of the *Amiga Shopper Shareware Collection* volume 3, with *AS* 25) and then compile it directly without ever having to load up AMOS Professional. This enables you to create a development environment similar to C by running both the editor and compiler from the Shell.

• Optimisation of the compiler's internal expression evaluator makes compiled code even faster. According to Europress, code compiled with the AMOS Pro Compiler will actually run faster than code compiled using the standard AMOS 1.35 compiler. Now that's fast!

• Smaller compiled programs. Not only will the compiler automatically squash compiled programs by up to 80%, but compiled programs can also be made to use a special AMOS library file held in your Workbench **LIBS** directory. This library will enable you to produce compiled code of only a few kilobytes in size.

• Not only will the AMOS Pro Compiler be powerful, but also very easy to use. Europress say it uses some more up-to-date and professional-looking graphics and offers a far more intuitive front-end that is a doddle to use. What's more, the press of a single key from within AMOS Professional is all that is needed to start the compilation process – the compiler will then compile the current program and place it into a new window. Clever stuff, eh!

PRO UPGRADE SOON

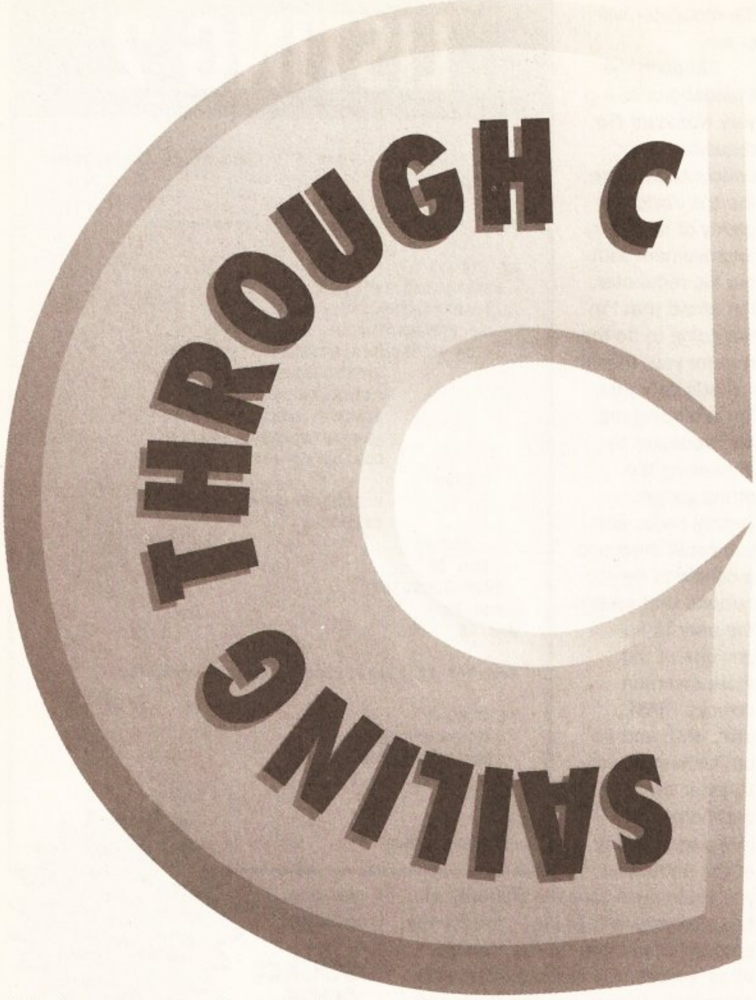
That's not all the news, though – not by a long chalk. Europress also revealed that compiler purchasers will also be given an extra disk containing AMOS Professional version 2.0. Before you hop out of your seat in excitement, though, it should be said that version 2.0 isn't as radical as its rather glorious name implies.

What it does offer is full support for the AGA chipset introduced with the launch of the Amiga A1200 and A4000. According to Richard Vanner, project manager at Europress, AMOS Professional 2.0 will enable A1200 and A4000 owners to take full advantage of the AGA chipset's extended palette. (Don't forget that AGA offers a full 24-bit palette – that's 16.7 million colours – and new 256-colour and HAM8 screen modes.) Although Richard could not confirm whether the upgrade supported HAM8, he assured me that it would most certainly allow AMOS programmers to open and use 256-colour screens.

Even without HAM8 support, AMOS Professional 2.0 and the AMOS Pro Compiler look very attractive. Contact Europress on 0625 859333 for more information and watch for the full road-tests in *Amiga Shopper* soon. You can be sure we'll be buttering up Europress to get hold of a review copy as soon as it's finished!

TOME BOO-BOO

Oops! It looks like I made bit of a boo-boo when I recently told you that Shadow Software's TOME extension works with AMOS Professional. According to Aaron Fothergill, author of TOME and just about everything else from Shadow, TOME still doesn't work with AMOS Professional. Oh well, we all make mistakes occasionally...



This month, Toby Simpson introduces the DICE C compiler as the mother of our bouncing baby Address Book application, and explains a little about it.

Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

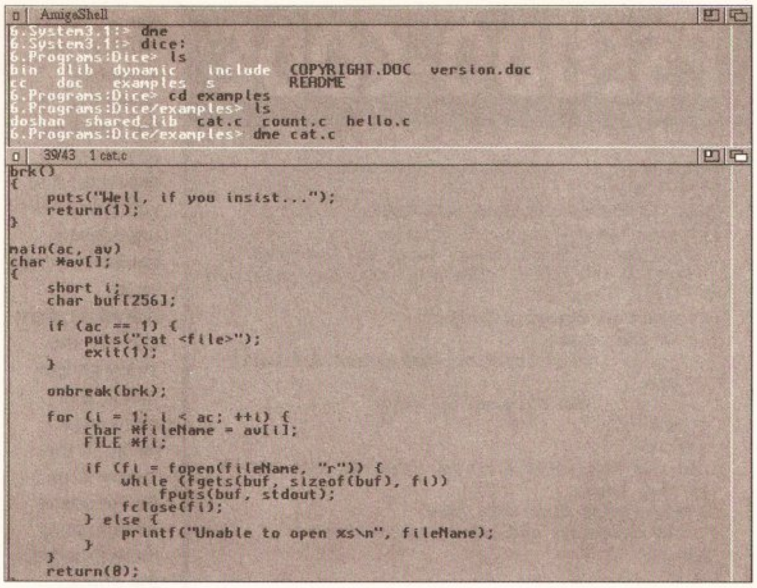
In keeping with the "upgrading" theme of this issue of *Amiga Shopper*, it's time to upgrade our C compiler from NorthC to DICE. DICE is Matt Dillon's Integrated C Environment. Why are we doing this? The bottom line is that we're going to be attempting some pretty high-powered stuff, and DICE is simply the best compiler for the job. It is also compatible with the latest version of C, the ANSI standard. Unfortunately it is far too big for us to give it to you on a cover disk, but it is available from PD libraries (see the directory on page 112), so you should be able to get hold of it easily and cheaply.

This month's C programming column will therefore be dedicated to getting you set up and working with the DICE C compiler. In future we'll feature fully DICE-compatible code. DICE code will work with little or no alterations with the SAS C compiler. We'll be testing our programs on *both* packages, and we'll specify any changes you might need to make to get the programs working on the SAS compiler.

INSTALLATION

The first hurdle is to get DICE set up. It is supplied as a single archive of about 525K in size. This un-archives to about 1.4Mb. If you're a hard disk user, this is going to be really easy, so skip the next bit and go to "Installing for hard disk users". If you talk to the supplying PD library nicely enough, they may be able to supply DICE already un-archived on to two floppies. If you have more than 1.5Mb of RAM, you can un-archive DICE using popular utilities such as *LhA* to your RAM disk. Fortunately, there's a great deal of this archive that you won't ultimately need.

Format two floppy disks, and call them **DiceIncs** and **DiceExec.** Now make a copy of your Workbench disk, and call that **DiceBoot** (as distinct from *Das Boot*, which was a cracking film with nothing in it about C programming). From the DICE archive, you'll need to put the following drawers onto **DiceIncs:**



Last month, we explained how programming was really not just writing code but thinking and planning. Of course, source code isn't the end of it either...

- include
- dlib

If you have purchased the includes from Commodore, then you can copy them directly into the include drawer, superseding any files supplied with DICE.

Copy the following drawers from the DICE archive onto the **DiceExec** disk:

- cc
- bin
- doc

This might leave some bits and pieces, but don't worry about this. The **doc** drawer contains lots of useful documentation, and is well worth looking at if you have a problem.

That's the hard bit done. Now you'll have to set up some assigns and paths. This involves editing either your user-startup file (for Workbench 2 or higher users) or the startup-sequence (for 1.3 users). Consult your manuals for more information on how to actually do this. The procedure for this is described in the file "README" which is supplied with the DICE archive.

INSTALLING FOR HARD DISK USERS

This is going to be a breeze. Find a nice place to put DICE, and create a drawer called **Dice.** Now un-archive the entire DICE archive to this drawer. That's it. You're now ready to set up the assigns and a path. How to do this is described in the file "README" which is in the archive.

HAVING SET IT ALL UP

Okay, you've got through the process of setting this up and you think you're ready to go. We'd better write a quick program to check how we're getting on then. Well, no first program could be anything other than "hello". So here we go. Use your favourite editor (or the DME editor supplied with DICE – documentation on how to use it is supplied in the documentation drawer) to create a file in the RAM disk called **hello.c.** Type in the following:

```
/* Our first DICE program */

void main(void)
{
 printf("Hello world!\n");
}
```

Now type in the following line exactly as it appears from the Shell:

```
dcc ram:hello.c -o ram:hello
```

After a short delay (a few seconds for an A4000 user with a hard disk, maybe a minute if you're having to work from a floppy!) the **dcc** command will return. If you've made any mistakes, DCC will point them out to you. If you're using a floppy-based system you might need to be the proverbial disk-jockey with the three disks. If all goes well, and you've made no mistakes setting up DICE, you should now have a 5K program in the RAM disk called *hello.* Type in this from the Shell:

```
ram:hello
```

With luck, you should get "Hello world" on the screen. Let's just try something a little more advanced to get the feel of it:

JARGON BUSTING

Archive – An archive is a collection of files all joined together into one single one. In most cases, these files will be compressed at the same time as creating the archive. This allows a number of related files to be sent as one smaller file. DICE, for example, takes up eight drawers, each containing several files. The whole lot added together is 1.4Mb, but supplied as an archive it's only one file and 550K. The archiving process can then be reversed (un-archiving), recovering the original files. The most common archiving program on the Amiga is called *LhA*.

Compiler – This turns the C programs you write in your text editor (the source code) into an object file which contains machine code instructions that your Amiga can execute. This then may need to go through a further stage, called linking, to turn it into a program that you can run from the Shell. (See **Linker.**) DICE can do the linking automatically for you.

Editor – You use an editor to write your C programs. DICE comes with one, written by the author of DICE, called *DME*. Instructions for using this are with the DICE archive. Your Workbench disks came with a rather less advanced editor, called *Ed*. A very capable editor called *EdWord* was yours on the *Amiga Shopper* cover disk with issue 25 (order a copy on page 116 if you missed it). Other editors worth thinking about if you're interested in buying a really good one are *CygnusED Professional* and *TurboText*.

Linker – A program which joins together the various segments of code produced by a compiler, along with any relevant library routines, and produces a finished, executable program that you can run from the Shell. Unlike some compilers, which need a separate linker program, DICE is capable of doing the linking automatically for you.

Shareware – Shareware is almost-free software. It is distributed like PD – public domain – and will only cost you a couple of pounds to get hold of, usually from the same sources as PD. The difference between shareware and public domain is that if you intend to keep using shareware programs you're expected to register them by sending something to the author, usually money and usually less than a comparable commercial program would cost you. Not only does this make you feel incredibly virtuous, but it helps enthuse the author of the program you've just registered to continue updating and improving it, which is good for you. So look on registering shareware programs as an insurance policy for your future use of them, or as a kind of try-before-you-buy system. In the case of DICE, the registration represents superb value for money: for only $US50 you get a complete working C compiler, of near-as-it-can-be to commercial quality, the includes, loads of utilities and other bits sent direct to your home. You don't get much fairer than that!

```
/* Our next DICE program */

void main(void)
{
 int loop;

 for (loop = 1; loop < 17;
loop++)
   printf("%ld x 16 = %ld\n",
loop, loop*16);
}
```

This one, when compiled and run, should simply produce the 16 times table up to 16x16.

Well done, you've got a working DICE C compiler environment. Further introductions to DICE are supplied with the compiler in the DOC directory, called BEGINNER_README-.DOC. I *strongly* recommend that you read this file closely before really getting in to it. You might also like to get some of our examples from previous months working using DICE as part of your experimentation. Try to get yourself as familiar as you can with the DICE environment, and above all, *read the docs*.

Next month, we'll start our *Address Book* application and try to get some basic filing working. You *will* need the Amiga includes, so if you haven't already got them, read the next bit...

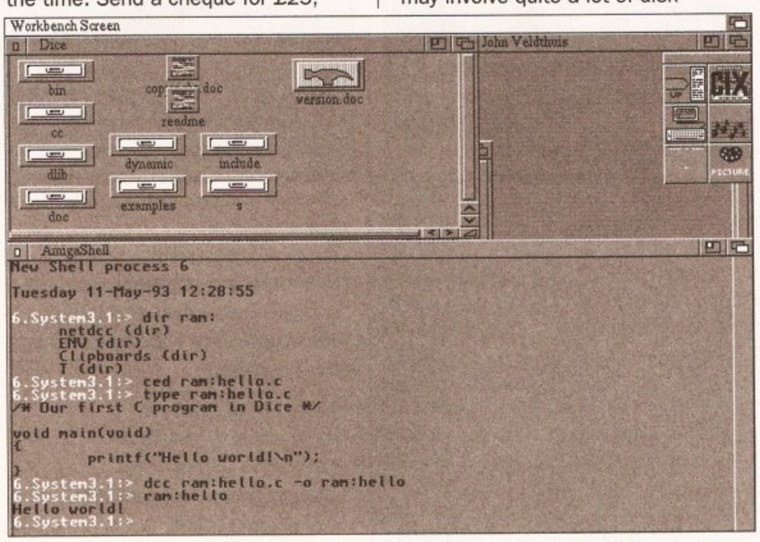
ONE LAST CHANCE AT THOSE INCLUDES

If you choose to register your copy of DICE, then the includes will be supplied for you as part of the registration. However, this won't give you the rather large collection of really handy debugging tools and example C code that come with Commodore's Native Developers Toolkit. Since we first published the address of Commodore and information about this toolkit, demand has been incredible and Commodore are almost snowed under by requests from *Amiga Shopper* readers – which just goes to show how many people are interested in serious programming on the Amiga. If you haven't already sent off for the Toolkit, now might be the time. Send a cheque for £25, made payable to Commodore Business Machines UK Ltd., to:

Developer Support,
Commodore Business Machines UK Ltd,
Commodore House,
The Switchback,
Gardner Road,
Maidenhead,
Berks SL6 7XA.

THE FOLLY OF THE FLOPPY

If you have only a floppy-based setup and you've already installed DICE, you've probably realised that this may involve quite a lot of disk swapping. If you're serious about developing programs on your Amiga, you really ought to strongly consider upgrading your Amiga to one with a hard disk in it or adding an external hard drive. A hard disk is one of those things that once you've had it, you can't live without it. Simple as that! Prices are continually coming down, and you can get a 40Mb hard drive for an A500 for around £229 or a 20Mb IDE hard drive for an A600 for as little as £120 (see the feature on IDE hard drives in *Amiga Shopper* 23, or page 116 to order a copy if you missed that). For an idea of what's available, flip through the adverts in this issue or watch for the *Amiga Shopper* hardware Product Locator next issue. (To make sure of your copy – and score yourself a bargain in the process – turn to the *AS* subscription service on page 41 this issue. End of Public Service Announcement.)



DICE at work: the fourth-last line here is the instruction to DICE to compile the code; the next line is the "execute" command; "hello world" is the output.

WHERE TO GET DICE

DICE is available from all good PD libraries (see the directory on page 112), as Fred Fish disk 491. It will cost you around £2.50. DICE is shareware, which means that if you like the software you are expected to register it by sending the author some money.

DICE, as the author himself says, is the deal of a lifetime. For $50, you can register DICE *and* get the Commodore includes (something we mention almost every installment of the C programming column). Once you've got your PD DICE, read the document supplied called "register.doc". This will describe in detail how to register your compiler. I do recommend you take the time to do this. The author, Matt Dillon, has invested a great deal of time and therefore money writing this compiler, which looks pretty impressive even next to some commercial compilers. Supporting him by registering your copy will help ensure that he continues to update and improve it in the future, which is good for all of us! Okay, preaching over. Now register it!

And by the way, if you have a CD-ROM drive or own a CDTV, you can also get DICE (and thousands of other goodies) off Almathera's CDPD disc. Contact Almathera on ☎ 081 689 8927.

As an alternative to DICE, if you're getting into C in a big way and you can afford it, you might like to buy the SAS C compiler from HiSoft. This rather weighty (and I mean heavyweight too, as well as expensive) package is the definitive C development environment for the Amiga. It's quite simply excellent. The latest version is v6.2; if you're interested in further information, contact HiSoft ☎ 0525 718181. AS

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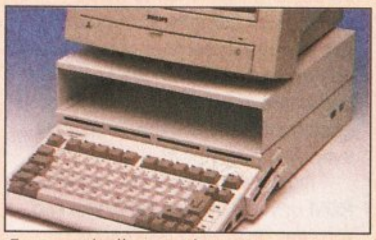
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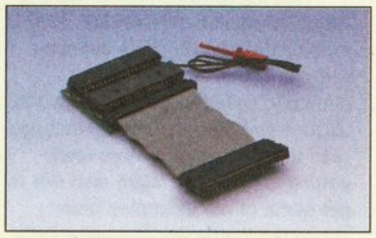
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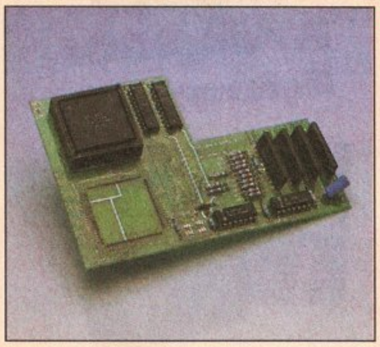
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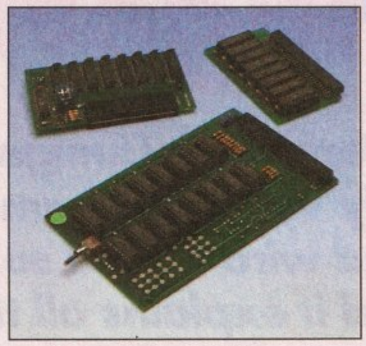
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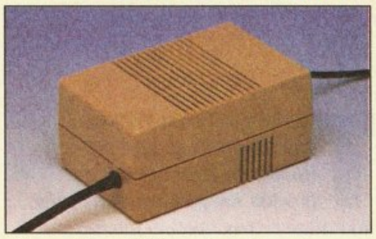
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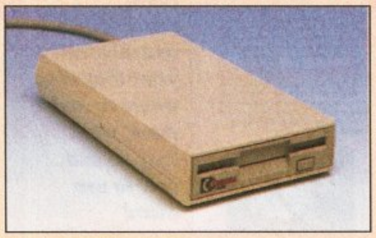
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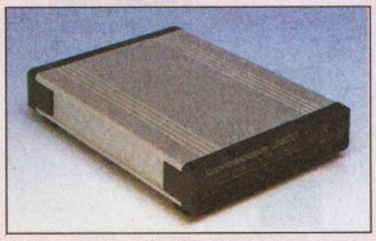
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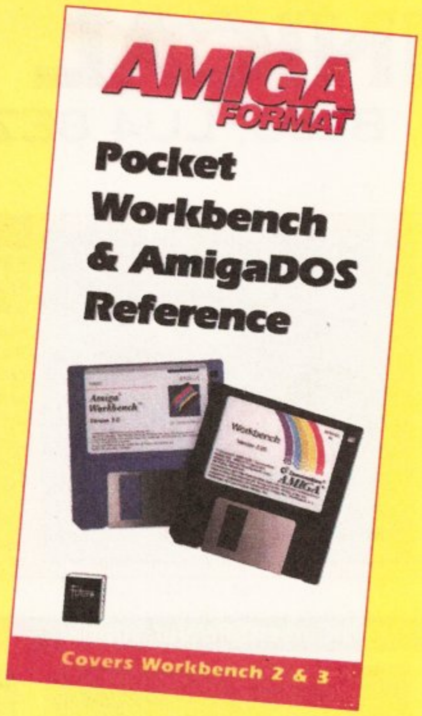
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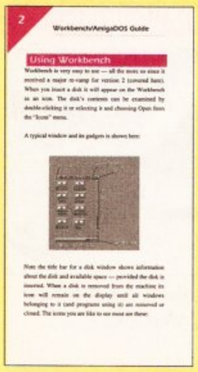
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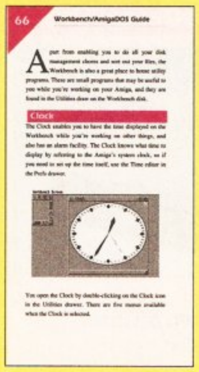
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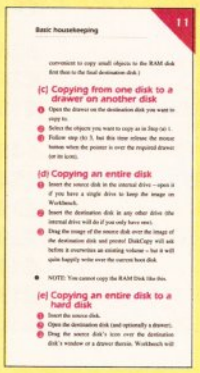
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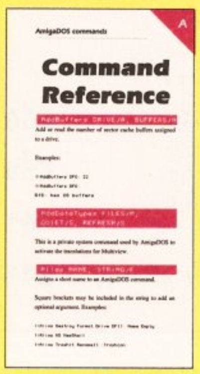
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Readers' listings

Our listing this month comes from Mark Thomas of Cardiff. It's called *Vectobject* and is a simple three-dimensional vector graphics manipulation program. Mark originally wrote the program in GFA Basic, and his listing appears first. We've also provided you with an AMOS version of the code to make this useful little routine accessible to a wider audience.

Have you always wanted to make money out of programming? Whatever your language, this is the place to do it! We pay £25 for each listing published. This month, we present Mark Thomas's Vectobject, a useful utility that enables you to manipulate 3D shapes.

Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

We've picked out this program because it offers a good entry-level beginning to vector graphics processing. The user is offered the choice of two objects, a cube and a pyramid, to manipulate. Moving the mouse causes the object to rotate, and holding the left mouse button down while moving the mouse pointer up and down the screen allows the object to be resized.

This is a simple piece of code but it provides lots of opportunities for the enthusiast to fiddle with 3D shapes. Currently, the objects are animated in only two planes – why not expand the program to rotate the shapes in three planes? They'll then appear to "tumble" as well as rotate. The code can easily be expanded to incorporate further objects and features, such as a menu-driven object requester – in fact, you could use the code for the file requester that is featured in this month's AMOS column on page 68. Or the code could be modified to perform hidden line removal – that is, make objects appear more realistic by concealing planes that are not visible from the current display angle.

• We're always interested to receive listings from readers – and remember, any that we print earn the sender the grand sum of £25. Send a listing of the program along with a disk with copies of all the files on it (source code, object code if you have a compiled version, plus any documentation required) to:

Listings
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Avon, BA1 2BW

```
REM Vectobject V1.47a
REM 3-D object manipulation program.
REM Written by Mark Thomas.
REM
REM Open up window
OPENS 1,0,0,320,256,2,0
OPENW #0
REM set up variables
n%=0
INPUT "Enter 1 for cube and 2 for ☛
pyramid",n%
vars
```

Here Mark is using a procedure to initalise the program variables. It's quite reasonable style to do this – especially if you want to re-initalise the variables at some later stage, although in this program it's uneccessary because the procedure is called only the once.

```
REM main loop
REPEAT
  checkmouse
  REM calculate the 2-D coordinates from
  REM the 3-D positions
  calc
  CLEARW #0
  REM draw the 2-D positions
  IF n%=1
    drawcube
  ELSE
    drawpyr
  ENDIF
  xturn%=(mx-160)
  zturn%=(my-120)
UNTIL 0
PROCEDURE vars
  DIM p%(8,1)
  dist%=1000000
  dstep%=0
  scale=0.75
  sstep%=0
  xturn%=0
  xstep%=3
  zturn%=0
  zstep%=3
RETURN
PROCEDURE checkmouse
  REM read mouse position
  tmy=my
  mx=MOUSEX
  my=MOUSEY
  mk=MOUSEK
  REM Adjust scale as appropriate
  IF mk=1 AND tmy<my
    scale=scale+0.05
  ENDIF
  IF mk=1 AND tmy>my
    scale=scale-0.05
  ENDIF
RETURN
PROCEDURE calc
  LOCAL x%,y%,z%,xts,xtc,zts,ztc,r
  REM Restore the chosen object
  REM coordinates
  IF n%=1
    RESTORE objcube
  ELSE
    RESTORE objpyr
  ENDIF
```

Mark has listed the origin co-ordinates for each object in a series of data statements – a perfectly sensible approach, but he then goes on to restore and read the data each time it is required. It would have been much more efficent to read the data once into an array and then manipulate it there. This is the method that we've adopted in our AMOS version of the program listed on the next page.

```
  xts=SIN(RAD(zturn%))
  xtc=COS(RAD(zturn%))
  zts=SIN(RAD(xturn%))
  ztc=COS(RAD(xturn%))
  REM set number for loop corresponding
  REM to the number of points defined
  IF n%=1
    numofpoints=8
  ELSE
    numofpoints=5
  ENDIF
  FOR i%=1 TO numofpoints
    READ x%,y%,z%
    r=dist%/(dist%+x%*zts*xts- ☛
y%*ztc*xts+z%*xtc)*scale
    p%(i%,0)=(x%*ztc+y%*zts)*r+160
    p%(i%,1)=(y%*ztc*xtc- ☛
x%*zts*xtc+z%*xts)*r+120
  NEXT i%
RETURN
PROCEDURE drawcube
  COLOR 1
  REM join all the points on the cube
  REM join all the bottom points
  LINE p%(1,0),p%(1,1),p%(2,0),p%(2,1)
  LINE p%(2,0),p%(2,1),p%(3,0),p%(3,1)
  LINE p%(3,0),p%(3,1),p%(4,0),p%(4,1)
  LINE p%(4,0),p%(4,1),p%(1,0),p%(1,1)
  REM join one bottom to top
  LINE p%(1,0),p%(1,1),p%(5,0),p%(5,1)
```

It may appear strange that Mark has decided to join the points in this order – but by so doing he improves the appearance of the animation on the

screen. If he had connected, say, all the bottom points together, then connected all the top points and then joined them together, the cube would appear "disjointed". If you want to see how this would work, move the above **Line** statement to the end of the procedure.

```
  REM join all the top points
  LINE p%(5,0),p%(5,1),p%(6,0),p%(6,1)
  LINE p%(6,0),p%(6,1),p%(7,0),p%(7,1)
  LINE p%(7,0),p%(7,1),p%(8,0),p%(8,1)
  LINE p%(8,0),p%(8,1),p%(5,0),p%(5,1)
  REM join remaining top and bottom
  REM points
  LINE p%(2,0),p%(2,1),p%(6,0),p%(6,1)
  LINE p%(3,0),p%(3,1),p%(7,0),p%(7,1)
  LINE p%(4,0),p%(4,1),p%(8,0),p%(8,1)
RETURN
PROCEDURE drawpyr
  COLOR 1
  LINE p%(1,0),p%(1,1),p%(2,0),p%(2,1)
  LINE p%(2,0),p%(2,1),p%(3,0),p%(3,1)
  LINE p%(3,0),p%(3,1),p%(4,0),p%(4,1)
  LINE p%(4,0),p%(4,1),p%(1,0),p%(1,1)
  LINE p%(1,0),p%(1,1),p%(5,0),p%(5,1)
  LINE p%(5,0),p%(5,1),p%(2,0),p%(2,1)
  LINE p%(5,0),p%(5,1),p%(3,0),p%(3,1)
  LINE p%(5,0),p%(5,1),p%(4,0),p%(4,1)
RETURN
objcube:
REM x,y,z coordinates for each point of
REM cube
DATA 50,50,-50
DATA -50,50,-50
DATA -50,-50,-50
DATA 50,-50,-50
DATA 50,50,50
DATA -50,50,50
DATA -50,-50,50
DATA 50,-50,50
objpyr:
REM x,y,z coordinates for each point of
REM the cube
DATA 50,50,-50
DATA -50,50,-50
DATA -50,-50,-50
DATA 50,-50,-50
DATA 0,0,50
```

NOW FOR SOMETHING ALMOST COMPLETELY IDENTICAL...

Here's a version of the same program in AMOS.

```
REM Vectobject - A 3D object manipulation
REM program
REM AMOS version based on design by
REM Mark Thomas
REM
REM Open a lores screen window
Screen Open 0,320,256,2,0
Dim P(8,1),X(12),Y(12),Z(12)
REM Initalise variables
REM
DIST=1000000 : DSTEP=0 : SCALE#=0.75 :☛
SSTEP=0
XTURN=0 : XSTEP=3 : ZTURN=0 : ZSTEP=3
Global SCALE#,XTURN,ZTURN,MX#,MY#, ☛
REPLY$, BEGIN, NUMPOINTS
REM
For I=0 To 12
   Read X(I),Y(I),Z(I)
Next I
```

The above loop reads the data for the origin points of both objects into three arrays – X(), Y() and Z(). This is more efficent than the Read and Restore approach Mark used in his GFA Basic version.

```
REM
REM Data for cube
Data 250,250,150
Data 150,250,150
Data 150,150,150
Data 250,150,150
Data 250,250,250
Data 150,250,250
Data 150,150,250
Data 250,150,150
REM
REM Data for pyramid
Data 250,250,150
Data 150,250,150
Data 150,150,150
Data 250,150,150
Data 200,200,250
REM
Radian
```

The Radian command allows us to specify the angles that we're going to use in the trig functions (SIN, COS, etc) directly in radians – rather than have to perfrom a conversion each time, as was necessary with the GFA version.

```
Do
   Cls
   Print "Type C to animate a (C)ube, P☛
to animate a (P)yramid, or Q to (Q)uit"
   Clear Key
```

Clear the keyboard buffer before checking whether a key has been pressed.

```
   Repeat
      REPLY$=Inkey$
   Until REPLY$<>""
   REPLY$=Upper$(Mid$(REPLY$,1,1))
   If REPLY$="Q"
      Exit
   End If
   If REPLY$="C"
      BEGIN=0
      NUMPOINTS=8
   Else
      BEGIN=8
      NUMPOINTS=5
   End If
```

The above **If** structure sets up the offset pointers so that they point to the correct addresses in X(), Y() and Z() for the origin data for the selected object. We can then use **BEGIN** to select the chosen object for animation.

```
REM Main program loop
REM
   Do
      CHECKMOUSE
      CALC
      Cls
      If BEGIN=0
         CUBEDRAW
      Else
         PYRDRAW
      End If
```

The two procedures **DRAWCUBE** and **DRAWPYR** have been renamed in this AMOS version of *Vectobject* because **DRAW** is a reserved AMOS command, which means you can't start the names of your variables or procedures with it.

```
      XTURN=(MX#-160)
      ZTURN=(MY#-120)
```

Modifying the values of XTURN and YTURN gives us the new angle of rotation for the next frame of the animation.

```
   Loop
Loop
End
REM
Procedure CHECKMOUSE
   REM store the previous y co-ordinate
   REM position for the mouse
   LASTMY#=MY#
   REM get the current mouse positions
   MX#=X Mouse
   MY#=Y Mouse
   MK=Mouse Key
   REM If the left mouse button is being
   REM pressed increase or decrease the
   REM scale of the shape
   If MK=1
      If LASTMY#<MY#
         SCALE#=SCALE#+0.05
      Else
         If LASTMY#>MY#
            SCALE#=SCALE#-0.05
         End If
      End If
   End If
End Proc
REM
Procedure CALC
   Shared X(),Y(),Z(),P()
   XTS#=Sin(ZTURN)
   XTC#=Cos(ZTURN)
   ZTS#=Sin(XTURN)
   ZTC#=Cos(XTURN)
```

The above four lines are used to calculate the angles for the next rotation position of the object.

```
   For I=BEGIN To BEGIN+NUMPOINTS-1
      R#=DIST/(DIST+X(I)*ZTS#*XTS# ☛
Y(I)*ZTC#*XTS#+Z(I)*XTC#)*SCALE#
      P(I-BEGIN,0) =(X(I)*ZTC#+ ☛
Y(I)*ZTS#)*R#+160
      P(I-BEGIN,1)=(Y(I)*ZTC#*XTC# ☛
X(I)*ZTS#*XTC#+Z(I)*XTS)*R#+120
   Next I
```

The **For/Next** loop is used to calculate the new 2D co-ordinates from the 3D co-ordinates stored in the arrays X(), Y() and Z().

```
End Proc
REM
Procedure CUBEDRAW
   Shared P()
   Polyline P(1,0),P(1,1) To ☛
P(2,0),P(2,1) To P(3,0),P(3,1)
   Polyline To P(4,0),P(4,1) To ☛
P(1,0),P(1,1)
   Polyline To P(5,0),P(5,1) To ☛
P(6,0),P(6,1) To P(7,0),P(7,1) To ☛
P(8,0),P(8,1) To P(5,0),P(5,1)
   Draw P(2,0),P(2,1) To P(6,0),P(6,1)
   Draw P(3,0),P(3,1) To P(7,0),P(7,1)
   Draw P(4,0),P(4,1) To P(8,0),P(8,1)
End Proc
'
Procedure PYRDRAW
   Shared P()
   Polyline P(1,0),P(1,1) To ☛
P(2,0),P(2,1) To P(3,0),P(3,1) To ☛
P(4,0),P(4,1)
   Polyline To P(1,0),P(1,1) To ☛
P(5,0),P(5,1) To P(2,0),P(2,1)
   Polyline P(3,0),P(3,1) To ☛
P(5,0),P(5,1) To P(4,0),P(4,1)
End Proc
```

Improve your

The latest addition to the Amiga premier division comes from American big-league players GVP with ImageFX, which combines image processing, morphing, "compositing" and more besides. Gary Whiteley checks the plays.



ImageFX struts its stuff in this obligatory effects image – halftone, explode, distort, bas-relief and, in the centre, a feathered composite.

What's the use of it all? What can a program like *ImageFX* (or, for that matter, *Art Department* or *ImageMaster*, its long-established rivals) be used for? And why would you need it?

There are as many answers to this as there are functions in the software. You might need to process scanned images prior to a printing process, perhaps to colour-separate images before making printing plates or to adjust the density of a monochrome image. Sometimes images also need to be cropped, scaled or resized. Or you may want to prepare composite pictures which could be used in animation, video output, slide-making or presentation work. Perhaps you need to create a morphing sequence or adjust a few pictures – even a relatively simple process such as retouching a 24-bit image needs some capable software. Image format conversion is yet another common requirement, allowing images from one computer platform to become available on another. The great thing is, all of these uses are addressed by *ImageFX*.

IN THREE PARTS

ImageFX consists of three main programs – the Image Processor, the Morpher and the Multi-Effects processor – and all can be interlinked for even greater flexibility.

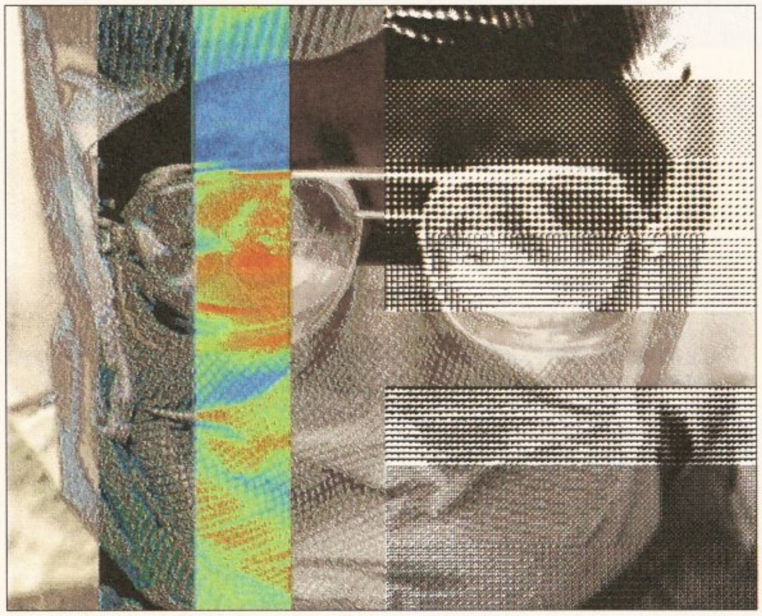
Unlike the opposition, *ImageFX* has a user interface which is both extremely flexible and can easily be customised. This applies not only to remapping the keyboard commands but also to changing the functions of some of the screen gadgets. There is also the option of entering control parameters directly via a command line interface – for instance, the command "Grid 0 0 80 64" sets up a grid with a width of 80 and a height of 64. This configurability sets *ImageFX* apart from both ASDG's *Art Department Professional* and Black Belt's *ImageMaster* and, with a little practice, can help to make operations reasonably simple. And if this weren't enough, there is a set of commands to keep even the most die-hard ARexx programmer happy.

INS AND OUTS

ImageFX supports an impressive number of external devices and tons of image formats, both for input and output. There is direct support for flatbed image scanners such as Sharp's JX100 and Epson's ES300G, as well as Progressive's *Frame-grabber* and the framegrabber functions of GVP's own *Impact Vision 24* card, enabling high-quality input directly to the program.

For disk-based operations and format conversions a very wide range of input formats is supported, including all the standard IFF (and AGA) ones plus Alias, GIF, TIFF, PBM, PCX, Autodesk Flick, BMP, ANIM, JPEG, Targa, Rendition, Impulse, PPM & PGM and RAW. Many of these are also available as output formats.

ImageFX can render directly to many display devices as well as all the Amiga's native display formats. Supported boards currently include IV24, HAME, Firecracker, DCTV, DMI Resolver, Opalvision and GVP's mythical EGS card. The first three can also be used for direct previews, though no doubt more will follow. Oh yes – there's also a choice of screen preview modes (including HAM, Greyscale and Dithered), which will at least keep those who have no AGA,



Yet more effects from ImageFX – this time a selection from the Colour effects functions. (Colour? In Amiga Shopper? Well, we had to show you, didn't we.)

JARGON BUSTING

ALPHA CHANNEL – An 8-bit (256-greyscale) buffer used as a mask when "compositing" images together – for example, an alpha channel containing a smooth white to black gradient will cause one image to fade smoothly across into another when used for "compositing". Alpha channels can be used to great effect for overlays, fade outs and so on, especially if a sequence of frames is effected over time.

MORPHING – A process that essentially shape-shifts and dissolves one image (or sequence of images) into a second image (or sequence of images) – you usually define the start and end points, and let your Amiga calculate and render the intermediate steps. Morphs are extensively used in TV and film advertising because they are visually very striking.

image

CONFIGURABILITY

Many aspects of *ImageFX* are fully reconfigurable by making simple adjustments to one or two text files. If there is a keyboard shortcut that you need to add, simply choose your key, find the command you need to add, change the definition file and you're in business. The same applies to the gadget menus. If you want a gadget to do something different from its default state – change it. Configuration changes can really save a lot of trips through the gadgets looking for the one you need.

24-bit or other special display devices moderately happy – though probably not ecstatic.

PAINT AND PROCESS

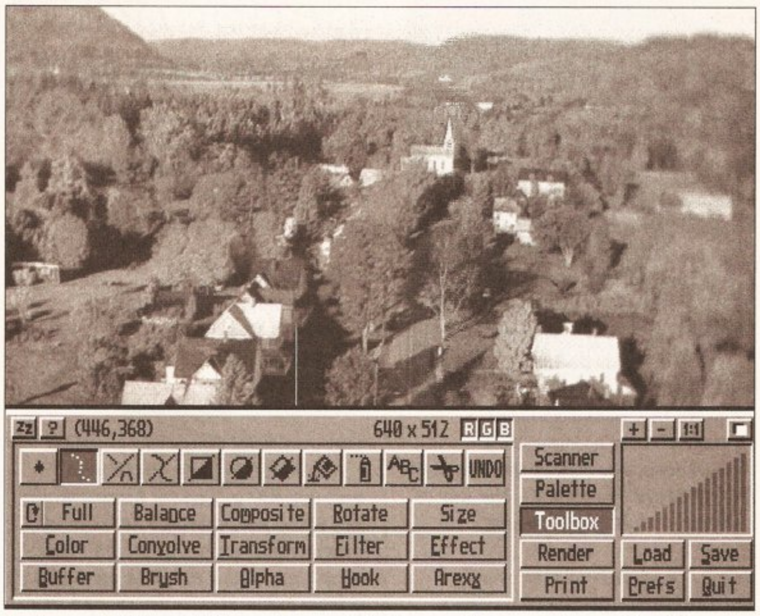
Once you have an image to play with, *ImageFX* can pull any number of cunning stunts to make an old image into something new. Take the processing effects, for instance: just employing a bas-relief effect can turn the mundane into the magical. Composite a new image over the top, add some text *(ImageFX* can do this too – though only with bitmap fonts), create a nice gradient-filled border and you could be on to a killer image. And all without ever swapping software.

The range of paint and drawing tools provided is very wide and most can be mixed with the majority of *ImageFX's* other tools to achieve some stunning effects. How about putting rain on a windowpane? No problem – knock up a quick 8-colour greyscale image, turn it into an Alpha channel image, pick out the area to be "rained on", apply the Distortion effect and Bob's the brother of one of your parents. Well, maybe not *so* easy but certainly far easier than doing it all by hand! The now-usual ripple effects are also included, plus several others, so you won't be stuck for choice.

Colour balancing, "convolve" effects, brush transformations, image rotation, printer output, ARexx control, halftone effects, colour effects, dithering effects – they're all there. So is a very handy image conversion feature.

GET CONVERTED

Many people have access to (or alternatively need to output) images which are in non-Amiga formats, whether through work, electronic media, bulletin boards or software outputs. Sometimes these need to be changed from one format to another – for instance from an Amiga format into one which can be displayed on a Mac or PC. This is where format conversion comes in. Of course, there are PD programs which can do limited format conversions, but only commercial software like *ImageFX* can deal effectively with such a variety of formats – for both input and output. Conversion is simplicity itself: just load the image (its format will usually be automatically recognised if it is supported by *ImageFX),* render as necessary – which might mean using the Foreign render module to force it into 256 colours, for instance – and then save it out again, choosing the appropriate save format as you go. Copy the image onto a PC-formatted disk and you're all done.



Just a part of ImageFX's main user interface – clear, concise, and not too hard to understand, even if you're new to all this image-manipulation stuff.

Of course you can also use format conversion on Amiga–Amiga images too, maybe to convert a 24-bit image into a 16-colour dithered one for use with *Deluxe Paint* or *Scala.* So instead of being the limit, the sky may just be the beginning.

(CINE)MORPH ON

Regular readers of this column will find *ImageFX's* morphing software rather familiar – it is a slightly extended version of GVP's own stand-alone *CineMorph* software (as reviewed in *AS* 23), though the *ImageFX* version can also be linked directly to the image-processing software so that further effects can be automatically added during morphing operations.

While there have certainly been some overall improvements (particularly with the addition of a Dissolve-only command to enable time-based mixing, rather than morphing, between two images) I'm still not too enamoured of *CineMorph,* and once again I had great problems successfully producing an acceptable sequence morph. I find the grid system obstructive and, although there is now a zoom facility – which certainly helps accurate point placement – the continuing lack of "onion-skinning" still makes *CineMorph* a pig to use, at least in my opinion. As you can guess, it would not be my first choice as an Amiga morphing program, even though this version (which cannot work without *ImageFX)* now has full AGA support.

MULTIPLE PROCESSING

Despite only being given a cursory two pages in the manual, the Multi Processor hook program (known familiarly as *IMP)* is one of this package's hidden gems. *IMP* is a very powerful piece of software which can be used to batch-process sequences of frames and then composite, effect and compile them into animations or other single images. Sadly, the manual gives very little insight into any of this, but users of the excellent *Rend24* shareware program, also written by *ImageFX's* author, Tom Krehbiel, will quickly recognise the similarity.

In simple terms you could, for example, take a sequence of 24-bit images, convert them to 256 colours and compile them into an animation which can be played back on an AGA

IMAGE PROCESSING FEATURES AT A GLANCE

	ImageFX	Art Department Professional	Image-Master	Notes
Version	v1.03	v2.1.3	v9.20	
Load formats	Many	Many*	Many	*Some require optional Pro Conversion Pack
Save formats	Many	Many*	Many	*Some require optional Pro Conversion Pack
24-bit operation	Yes	Yes	Yes	
AGA support	Full	256/HAM8	256	
Painting tools	Yes	Yes	Yes	None with direct 24-bit operation
Brush tools	Yes	No	Yes	
Scanner support	Yes	Yes*	Yes	*With optional Scanner Drivers Pack
Framegrabber support	Yes	Yes	No	PP&S and IV24
Morphing	Yes (1)	Yes (2)	Yes (3)	(1) *CineMorph* incl; (2) *Morph Plus* extra; (3) integral
Colour operations	Yes	Yes	Yes	
Image compositing	Yes	Yes	Yes	
Alpha channel	Yes	Yes*	No	*Limited
Alpha channel effects	Yes	No	No	
ARexx support	Yes	Yes	Yes	
Multi-image processing	Yes	Yes	Yes	
Printer output	PS/PF	PS/PF	PF	PS = PostScript, PF = Preferences
Colour separation	Yes	Yes	Yes	
Dithering effects	Yes	Yes	No	



Beneath this mild-mannered requester lurks a processing powerhouse. For this is the ImageFX Multi-Effects Processor – the key to automated batch processing.

Amiga. Or maybe take an image sequence and composite it onto a single background image while stripping away the single-coloured background from the foreground sequence by using transparency and matting commands, and then render and save each new frame as GIF files. You could even use an Alpha channel to affect the "compositing". With a little application many strange and wonderful things are possible.

In fact it is even possible to instruct *IMP* to wait for frames which are being generated by an external program (for example, *Imagine)* and each time a new frame is produced it will be automatically processed into an animation (or whatever). I found that I could run two copies of *IMP* and have the first process the frames in once and then have the second process them again and *then* save them. *IMP* is, without doubt, very powerful – but frustratingly under-documented.

Overall, I have to say that *ImageFX* provides a comprehensive suite of programs and tools which are, in general, excellent – though rather let down in the morphing department. Otherwise the impression I got is of professional-quality software which benefits enormously from being run in a high-powered environment. Although *ImageFX* is the new brat of the image processing pack, I think it stands every chance of doing very well for itself. Impressive.

REQUIREMENTS: At least 3Mb memory. Recommended: hard drive (using a floppy can be excruciatingly slow), Workbench 2.x or greater (will work under 1.3), accelerator, 24-bit card or AGA Amiga.

Full installation requires around 2.4Mb of hard disk space. AS

SHOPPING LIST

ImageFX £269.95
by Great Valley Products inc.
600 Clark Avenue, King of Prussia,
Pensylvania 19406,USA
☎ 0101 215 337 8770

Distributed in UK by:
Silica Systems, 1-4 The Mews,
Hatherley Road, Sidcup,
Kent, DA14 4DX.
☎ 081 309 1111

CHECKOUT IMAGEFX

Features ●●●●●
Packed to the gills with useful tools – possibly more so than either of its rivals.

Documentation ●●●○○
Well-presented and extensive but still very sketchy in places – too many potatoes and not enough meat, if you ask me.

Ease Of Use ●●●●○
Generally quite easy to use, though more specific tutorials would help. Good, well presented, user interface.

Speed ●●●●○
Mostly quite nippy, though some very intensive processes – like MotionBlur – can be very slow, even with the benefit of an accelerated machine.

Value for money ●●●○○
Overpriced, compared to its *ImageMaster* rival, though significantly cheaper than an equivalent *ADPro/MorphPlus* combination. Might be better value if *CineMorph* were an optional extra.

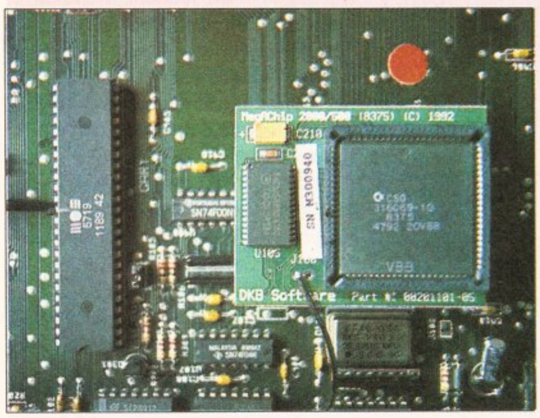
Overall rating ●●●●○
I've not been overly impressed with the finish of some of GVP's recent products, but *ImageFX* is a well-put-together, powerful, flexible and, above all, useful package which will take care of all but the most esoteric image-processing and manipulation needs.

BROADEN YOUR CHIP MEMORY

The original DKB MegAChip has been redesigned and is now significantly smaller than its predecessor, while still offering a convenient (if fairly expensive) way of upgrading any Amiga 500, 1500 or 2000 to a full 2Mb of Chip Memory, providing far more flexibility for video, graphics and sound applications.

Installation in most Amiga 1500s or 2000s is very straight-forward, though a few older ones (rev 4.x) will require that a solder trace is cut. If you are competent with a screwdriver, have a steady hand and a reasonable amount of patience, the whole procedure should take around 20 minutes. The power supply unit has to be removed (and all peripherals too, for easier access) and the original Agnus chip has to be carefully removed from its motherboard socket. DKB recommend a proper chip puller be used, but a small screwdriver, great care and a strong elastic band wrapped around the socket have worked fine for me in the past and didn't fail me this time either.

Once this is done, the whole MegAChip card easily locates into the empty socket and a gentle downward push seats it correctly. A small clip-on lead has to be connected to either pin 48 of the 68000 CPU chip or pin 36 of the Gary chip. I opted for my namesake.



Thought you'd got through all the upgrading stuff this issue, did you? No chance. You see, your video applications could benefit from DKB's MegAChip...

Just to make sure all was well, I partly reassembled the machine and booted up. Success! No problems and all the Chip RAM appeared to have been configured okay.

After reassembly, I set about trying to cause the MegAChip to fall over. In fact, the only sign of trouble was when I really pushed the multi-tasking (I've also got 10Mb of Fast RAM installed) and had two large *DPaint* screens open and a big brush, as well as *ProPage 4* running too. The worst I could get to happen was that the brush left a few artifacts on the *DPaint* screen when it was being moved about. Fingers crossed, I'm happy to report that otherwise all seems hunky-dory and I've had no cause to worry in the month or so that I've had the MegAChip installed.

The procedure for Amiga 500s is a little different, and various revisions require that certain jumpers and solder traces be removed and cut. With care most people should be able to manage this installation. However, the cost of the MegAChip may make it a more attractive proposition to buy a new A1200 than try to upgrade an old A500 – unless you have a load of A500-specific peripherals which obviously won't work on an A1200. Note that the MegAChip will not work with A501 slot RAM expansions which carry more than 512K of RAM because these do not operate as true Fast RAM and interfere with the Chip RAM addressing.

WARNING. Great care is needed while working on your computer innards. If you are at all nervous about it, or want to avoid any chance of damaging your Amiga, it may be better to get a qualified professional to do the job for you. AS

SHOPPING LIST

DKB MegAChip £250
(subject to US exchange rates)
by DKB Software
50240 W. Pontiac Tr.,
Wixom, MI 48393,USA
☎ 0101 313 960 8751

Available in the UK:
From most good dealers.

CHECKOUT DKB MEGACHIP

Documentation ●●●●●
No worries with these instructions.

Installation ●●●●●
Most users should be able to do it. No soldering required.

Ease Of Use ●●●●●
In use it is completely transparent to the operating system.

Value for money ●●●○○
The pound-dollar exchange rates mean the cost has recently soared.

Overall rating ●●●●○
A must for those who want to keep up with the A3000 and 4000 in terms of memory power but want to keep their peripherals and pockets reasonably intact.

Reader Ads

...or how you can reach 50,000 fellow Amiga owners for only a fiver.

FOR SALE

Amiga 1500, 1084S Monitor, SwitchSoft input output port. Dust covers, three joysticks, 110 original and PD disks, manuals, Abacus books, loads of magazines. All for £500. ☎ 0484 641533

Amiga 500 Plus, 2Mb RAM, GVP 52Mb hard drive, Philips CM8833 MK2 monitor, external drive. Sampler, joysticks, mouse, over £600 software, only £600 ONO. ☎ Mark 0908 674228 anytime.

A500 Plus, 2Mb, 8833 Mk II monitor, external disk drive, hand scanner, *PageStream 2.2*, games, PD, business software, all boxed. £450. with HP Deskjet 500, £675 ONO. ☎ 031 669 9085

A1500, 5Mb RAM, Supra 120Mb hard drive, Commodore Flicker Fixer, Kickstart Sharer, Workbench 2.04/1.3, boxed, with original software and manuals, £399 ONO. ☎ 0529 413407

Amiga 3000, 6Mb, fully loaded 105Mb hard disk, NEC multisync monitor, PC emulator, mouse, joystick, MIDI interface, manuals, lots of software, serious and games. £1,500. ☎ 0483 769139

A500, Workbench 1.3 with 1Mb RAM, Naksha mouse, joystick, manuals, modulator and software (including *Zool* and various PD and other games). Only £175. ☎ 0260 299619 after 6 pm.

ICD Adspeed accelerator for A500, 6 months old, boxed with manual, £65. AMOS Basic ver 1.34, and *Sequencer One Plus*, both originals with manuals etc., £18 each ONO. ☎ 0308 56945 evenings.

GVP 120Mb hard disk with 4Mb RAM, 8 months old. £400 ONO. ☎ 0383 880607

A1500, DOS 2.04, 9Mb RAM, 52Mb Quantum hard disk, £550. AOC multisync monitor £250. Deskjet 500 printer £200. Genlock £50. *VIDI* £50. Dr T's *KCS* £100. £900 the lot! ☎ 0332 882044

GVP Impact Vision IV 24 hardware and software £800. ☎ 0889 584492 evenings.

Bare 52Mb Quantum SCSI HD £120. Auto/manual parallel port expander, 4 outlets, £40. ☎ Phil 0322 279297 (after six)

Amiga 1500, Workbench 1.3, 20 games, 2 joysticks, 2 mice, utilities, PD disks, disk box, manuals, boxed as new, worth £750+, accept £265. ☎ Uxbridge 0895 252905

GVP 52Mb with 4Mb RAM £300. ☎ Blackpool 0253 868954

Amiga 1500+ GVP 52Mb HD and 2Mb fast memory, GVP 68030 accelerator at 40MHz, FPU and 4Mb 32-bit memory, 3 months old, 3 disk drives, £300+ software, £1,100. ☎ 081 309 1587

GVP IV24 with Pro transcoder £700. PP+S 0/40 Mercury £650. Rambrandt from PP+S £1,000. Rendale Pro Genlock £300. All items as new. ☎ Joe on 0279 730020

A1500 1.3/2.04, 5Mb RAM, GVP II 52Mb 2x3 drives, manuals etc., £650 ONO. Swift 24 colour, £150. ZVP *Videostudio* £50. Pro version (1.3 only) £100. ☎ Steve 0264 355399 after 6 pm

Amiga A1500, 105Mb Quantum hard drive, 4Mb RAM, Golden Gate 25MHz 386SX PC emulator, Citizen 224+ printer, various games, £800. ☎ 081 543 9519 after 6 pm.

Amiga 500, Wbench 1.3/2.04, ECS, 1Mb Chip, 1Mb Fast, 20Mb A590 hard drive, plus 14 top games, £300. Star LC24 printer £100. ☎ 081 207 2075

Atonce Plus 16 MHz 286 £100. Lattice C-5.1 £100. Action Replay, latest version, £40. Wanted: hard drive controller, Visionary software. ☎ after 8 pm only Robert 0875 613793. Also prefer before 10 pm Thanks!

A500, 2.5Mb RAM, 60Mb GVP hard drive, all boxed, excellent condition. Will accept any reasonable offer. ☎ Neil 0993 778596

Amiga 500, Workbench 1.3, 52Mb GVP hard drive, 4Mb Fast RAM, Power external drive, joystick, games, excellent condition, £600. ☎ 081 778 4677 after 7 pm

KCS PC power board for Amiga 600/1200 including DOS 4.01 and 5.0, used once, £135. Also Amos Pro (latest version), unused, £40. ☎ 0255 220247. Visa payment possible.

HP Deskjet 500c Inkjet printer plus cable, drivers etc. Only 3 months old. Quick sale required, £400 ONO. ☎ Chris Lewthwaite 0602 625150 (anytime).

A500, Wbench 1.3, GVP 52Mb hard drive, 1Mb Chip RAM, 2Mb Fast RAM, external floppy drive, TV monitor, stereo speakers, software etc. £500. ☎ 0702 341895 (evenings)

Commodore 1084sdi monitor £120, floppy drive £25, SAS/Lattice C V5.10B £80, all excellent condition. ☎ Paul 0452 507539

Blizzard Turbo Memory Board, 14MHz boxed as new, half meg populated, £130. Datachat modem, £25. Amiga 500 software included. New titles – *Dune, Kyrandia, Photon video* etc. from £5. ☎ 0838 743718

A500 V1.3 1Mb Chip, modulator, £150. GVP 52Mb HD + 2Mb £250; GVP PC286 emulator £100; CM8833 monitor £100; SAS 'C' + RKM's £100. All GC, boxes and manuals. ☎ Chris 0400 61691 (Lincs)

Amiga CSA Mega Midget Racer accelerator 68030/33MHz for 500, 1500, 2000. Cost £465, want £230. Commodore MPS 1230 pinter, 9 pin, £65, both as new with boxes. ☎ Phil 021 382 4153

Vortex G Gate 386SX emulator, 8Mb memory, VGA Card and monitor, less than 1 year old, £400. ☎ 0530 815907

Amiga 2000, 52 Mb Quantum hard drive, Wbench 1.3, 2.04, 1Mb Chip, 4Mb Fast, flicker fixer, XT bridge board, VEA card, £100 ONO. ☎ 0730 264637

Amiga 500, 1Mb RAM, modulator, 1.3 Workbench, needs power supply, mouse, £100. Also *Amiga Format* issues 12 – 24 with disk/s £3.50 each. Binders £3.50 each. ☎ 0527 852771 after 6pm

Amiga 1500 + Wbench 2.04, GVP 52Mb hard drive, 5Mb RAM, all docs and software, Philips 8833 monitor, all for £650 cash. ☎ Peter on 0277 363351 Essex.

A500 1Mb, two D-Drives, £1000's software pro/games, £230. Vortex PC-286 VGA hardware emulator, lots software, £150. Slight fault Swift printer, £60. £370 the lot. ☎ Mark 0602 664393 for much more info!

Accelerated A500, Workbench 1.3 with 1Mb Chip-RAM, B5000 68030-25 with 4Mb 32-bit RAM, 104Mb fasttrack hard drive (870k/sec), ext. floppy. All boxed as new. Cost £1,800, sell £750 ONO. ☎ 081 6749497. Will split.

Amiga 500+, 2Mb RAM, hardware PC emulator, stereo sound sampler, joystick and some software, everything boxed and in very good condition. All for only £290. ☎ Steve 0702 461334

A1500, 52Mb GVP Quantum HD, 3Mb RAM, colour monitor, Action Replay, Naksha mouse, free software, coverdisks and magazines. Excellent condition, boxed with manuals. Only £600. ☎ Yatish 0533 707908 after 5 pm

GVP 52Mb HD8, 7 months old. Perfect condition, boxed as new. £240 ONO. ☎ 0903 762306 (West Sussex)

Amiga 1500, Wbench 2.04, 3Mb RAM, 10845 monitor, business software, DTP, games, loads of utilities, manuals, books, magazines, boxed, hardly used. Bargain at £700 ONO. ☎ Richard 0444 245102 (Sussex)

Citizen Swift 240C colour printer with starter kit and print manager. Brand new. Unwanted gift. £250 ONO. ☎ 0525 220486

GVP 52Mb hard drive, 2Mb RAM, £250, ProGen genlock £30, VIDI+ splitter (digitiser) £30. *AMOS 1.21, AMOS 3D, AMOS PD* £30; *Spectracolor 3.2* £30; *PenPal* £30. ☎ 0850 211087 after 7pm.

A2286 Bridgeboard, PC 40Mb hard disk, SVGA adaptor for A1500, A2000, £330. *ProPage 2*, manual with upgrade pack to version 4, PAL-AGA, sealed supplement manual and disks, £80 ONO ☎ 0252 20221 (Hants).

GVP A530 120Mb hard disk, 40MHz 68030, 1Mb 32-bit RAM, see ads elsewhere for specs. Costs up to £899 new, only four months old, yours for a mere £649. Matt ☎ 0262 851108.

Amiga 2000 ROM 2.04 ECS 9+Mb, flicker-free video, SVGA monitor, DeskJet 500 printer, hand scanner, GVP 80Mb HCII+ 2 floppy drives, £1,500. ☎ Chris 0407 762241 x 7444 weekdays.

Olivetti ET121/ETV300 word processor in good working order. Hutchinson, 34 Alty's Lane, Ormskirk L39 4RQ ☎ 0695 577966.

A1500, 2.04, GVP II 105Mb hard disk, 4Mb RAM, Philips 8833II monitor, Power 1.76Mb dual floppy disk drive, stereo sound system, VGC with *Wordworth, Home Accounts 2, Superbase 2,* all £775 ☎ 0491 411624 evenings.

Amiga A1200 + 60Mb hard drive £500, Scala 500 £45, Citizen Swift 200 colour £170, all mint condition. Contact Steve ☎ 0892 538645.

Amiga 2000 3Mb 20Mb Hard Disk, 2x3.5 disk drives, 1084S monitor, Kickstart and Workbench 1.3, printer, programming software, manuals, 20+ games, mouse, *Music Studio, Photon* and *Deluxe Paint.* Only £850 ☎ 0602 765138.

FANZINES

Trojan Phazer owners! Marksman Disk 2 now available. Reviews, samples, hints, Phazer-compatible games. £1 only to David Green, 67 Thicket Drive, Maltby, Near Rotherham, South Yorks S66 7LB

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Issue 27

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Getting to know

Dave Winder takes a look at archiving while doing some bedtime reading and logging on to the Amiga Swopshop, all at once. Talk about multi-tasking!

Now that more and more people are discovering the Internet, more and more people are also discovering what a vast and sometimes difficult place it is. At last someone has written a book aimed squarely at the newcomer to the Internet, and I've been doing some intensive bedtime reading to bring you this review.

The Internet Companion (A Beginner's Guide To Global Networking) is quite a mouthful of a title, but it does describe the content of this book very well. The author, Tracey LaQuey, obviously knows her subject matter very well indeed. The book is a paperback, in "pocket" format (you know, tall and slim, just like Sigourney Weaver), and it has the complete lowdown on that huge international comms network. I was immediately impressed by the fact that the foreword was written by Senator Al Gore – yes, in America senior politicians are involved in comms! (And yes, I suppose I am pretty easily impressed.) The book has a very logical structure to it, starting off with the reasons why you should want to know about the Internet and then sketching a brief but very complete history of the network. I found this section quite fascinating, and it goes to show that this book has something to offer even to people who are in no way new to the Net.

Tracey manages to combine the technical intricacies of this subject with examples of Internet life, and she does this very well indeed. There are many boxed-out examples in the book – such things as a marriage made on the Net, Internet in the classroom, and even Sightings of Elvis on the Net. It isn't all just jolly anecdotes, though – the technical details that people really need to know are all here as well. Explanations are given on what FTP is, for example, and how to do it. EMail, Usenet, Telnet, and Gopher are all also covered.

Although this book has a somewhat natural American bias, that doesn't mean it is not just as useful in the UK. Similarly, the bias is towards the PC and the Mac, but that doesn't make it any less useful to the Amiga user.

The one area of the book that I found lacking is that there is no glossary. I am amazed that this is missing in what is meant to be a beginner's handbook. The text is littered with all sorts of comms and Internet technical terms, as well as all the "in words" that tend to mean nothing to those outside this world. So I would have to say that if you really are a complete beginner to comms, you might find the book heavy going because you won't understand half of what is being referred to. However, provided you are already using comms, this book really is the best introduction to the Internet that I have seen so far. I heartily recommend it.

• Thanks to Gordon Hundley for drawing my attention to this book and lending me his copy to review.

SHOPPING LIST

The Internet Companion (A Beginner's Guide To Global Networking) £9.95
by Tracey LaQuey with Jeanne C Ryer
ISBN 0-201-62224-6

Available from all good bookshops

WAVEY'S BBS GUIDE, PART 2

This month I am continuing my look at some of the Amiga-orientated Bulletin Boards that deserve attention, and the deserving BBS this time around is Amiga Swopshop (☎ 081 986 5964).

Amiga Swopshop is unusual in that the Sysop really makes an effort to make contact with his users, and not just on the BBS. Now I don't mean to say that most Sysops don't try to do this, but Jim Hendry appears to try just that little bit harder than most. For example, Jim does not validate new accounts on Amiga Swopshop until he has actually made voice contact with the user. He really does phone up and check that the user is genuine – I

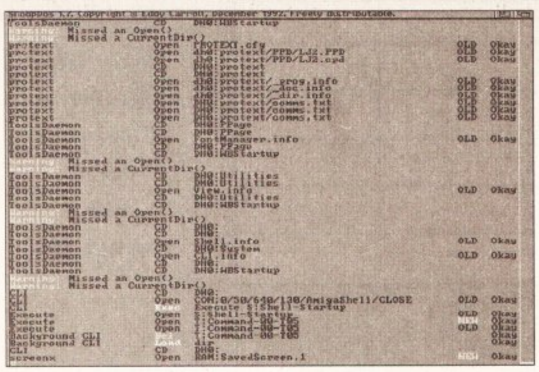
• NEWS • NEWS • NEWS •

One of the most useful utilities available for the Amiga, in my opinion, is *SnoopDos*. This program enables you to see exactly what programs are doing at AmigaDOS level, and therefore trace problems, snags, and so on. Its author, Eddy Carroll, recently became aware of a hacked version of his program that was becoming available on some BBSs. The latest official version of *SnoopDos* is 1.7 but a version 2.0 had started to appear.

Eddy, being a comms enthusiast himself, used this medium to warn people about the bogus file. He posted a warning message urging anyone who sees *SnoopDos* 2.0 to inform the Sysops concerned and not to download it. Word has spread around the networks, not just in the UK but worldwide, and as a result, with luck, the fake version (which could contain anything – viruses are quite commonly spread in this way) will not be allowed to spread.

Just goes to prove the power of comms, if used correctly.

Please note, once again, that the last *official* version is *SnoopDos* 1.7 and the *fake* version that you should avoid is *SnoopDos* 2.0.



SnoopDos 1.7 is the genuine article, seen here doing its stuff, revealing all about what your Amiga's up to.

THE NEXT VOICE YOU HEAR...

The comms world at last has a co-ordinated voice to safeguard its interests. CommUnity (The Computer Communicators Association) is being set up even as you read this. Representatives from the major Networks are forming the initial steering committee, including FidoNet, InterNet, CIX and GT-Power, with Janet to follow soon. It is a big job to set up an organisation such as this and the steering committee certainly have a lot of hard work ahead of them. They hope to schedule an inaugural meeting of CommUnity for September.

I will keep you informed of progress, and when such things are finalised I'll let you know how to join and help to ensure that comms continues to grow and prosper in the UK.

THE VERY

Here's a chance for me to tell you about a really useful utility if you ever want to transfer binary files by EMail. Oh yes, it can be done, but it involves something called "uuencoding" and "uudecoding". It all sounds very Secret Squirrel, doesn't it (I know, I'm showing my age again), but it really is quite straightforward. Basically what is happening is that when you uuencode a program file it is converted into printable, ASCII, characters so that the program can, in effect, be sent as a message. Of course this means that the program is useless to the recipient in this format. So the person receiving the program uudecodes it to convert it back into binary form.

The main problem with this is that the uuencode/decode programs available are not exactly user-friendly, and I have lost count of the number of people who have begged me for help in getting the

you

know, because Jim phoned me after I logged on for the first time to look around for this article. By doing this Jim can ensure that users are genuine, which results in much less likelihood of abuse of the system and its other users.

The Swopshop runs on an Amiga 3000, a total of just under 500Mb of hard disk space and 6Mb RAM, and a Miracom HST Dual Standard modem. Although the name may suggest otherwise, this BBS has a very strict no-piracy rule – as all BBSs worth using should have. After all, piracy is theft and that's all there is to it. There are also rules concerning bad language and pornography. This would appear to be a very above-board Bulletin Board. (Try saying that after a few pints down the local.)

So who is behind the screen? Jim Hendry is a 32-year-old handyman who started out in computers with a 16K Spectrum back in 1981. It wasn't until 1990 that Jim got really interested in comms though, and his explorations led him to the conclusion that he didn't really feel that Sysops were helping new users enough. This was enough to prompt him into action, and Amiga Swopshop was born. All new users are treated to a phone call so Jim can chat with them to check they are who they say, and this usually happens within 24 hours of you asking to join the BBS. Jim also prides himself on answering 100% of EMail enquiries within 48 hours, and 99% within 24 hours. He believes it is vital to make users feel welcome and at home straight away if they are actually going to participate on his BBS, and of course he is right.

To give you an idea of how much work has gone into the Swopshop, here are some statistics. There are currently 92 EchoMail Areas covering just about every topic you can think of, including the Real 3D and Imagine mail and file areas. In total there are 58 different file areas, and a totally amazing 38 on-line games to choose from. (Not that *Amiga Shopper* readers ever play games, do they?) There is a live tele-conferencing facility, an on-line IQ test (I've carefully avoided this. I'm not stupid, you know. No, that's not right...), and even a fun life-expectancy test. Future plans include more dedicated lines for the BBS – Jim hopes for at least three – CD-ROM on-line (I think all Sysops would rank this high on their wish-lists), and the takeover of *Amiga Shopper,* although I'm not sure if he really means this.

COMMS COST CUTTERS

❶ Save money by using the "capture" facility of your terminal software program to study the menu options and file lists of the Bulletin Boards you log on to. This way you can get to know your way around the BBS and decide which files you want without paying excessive telephone charges.

❷ Buy the fastest modem you can afford. The slower the modem, the more time you spend actually on-line, and so the more money you pay in telephone charges.

❸ Because keeping telephone charges down is the best way to save money, try to keep your comms explorations to off-peak times. Learn to do without sleep...

❹ Think about using Mercury for long-distance calls. If you make a lot of them, you should find that you can make considerable savings when compared to Telecom charges (but it does cost £11 a year).

❺ Finally, don't archive text files. Although text files are bigger than the archived versions would be, plain text travels much faster, so the balance ends up in your favour.

CIX TRICKS 'N' TIPS

The *Amiga Shopper* "Cix For Free" offer in *AS* 24 has been a roaring success. In fact the powers that be at the Compulink Information eXchange tell me that ours has been the most successful offer they have ever been involved with. Of course, what this means is that more and more Amiga users are now Cix users and have access to many of the Amiga Answers Panel. I've been flooded with questions in the last month – not that I'm complaining. (Not that anyone would listen if I did.)

The Internet gateway has proved very popular among the *Amiga Shopper* readers who have joined, and the question I have been asked most about this has been, "How do I write to a Usenet Newsgroup?" Well, the answer is quite simple. By the time you read this the new Cix Newsreader should be up and running. This is a version of the very popular TRN Newsreader, and gives the user read/write access to all the Usenet Newsgroups available via the UKNET feed. There will be an informative on-line manual and also on-line help, so it really will be easy to use. I've been playing with it for a few weeks now and it is brilliant. There is, of course, no charge for this excellent service over and above the normal on-line charges.

Watch this space for more Cix tricks and tips. AS

USEFUL COMMS UTILITY CORNER

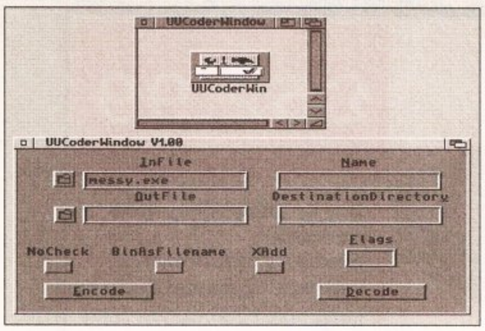
right syntax to actually do the business. *UUCoderWindow* solves these problems by creating a simple window interface for the *UUEncodeX* and *UUDecodeX* programs. The interface really is quite intuitive, and if you do have any problems, the documentation, although brief, is very pertinent and easy to understand.

Full marks to the German author on this one. (Okay, okay, so my puns are getting worse, I admit it.)

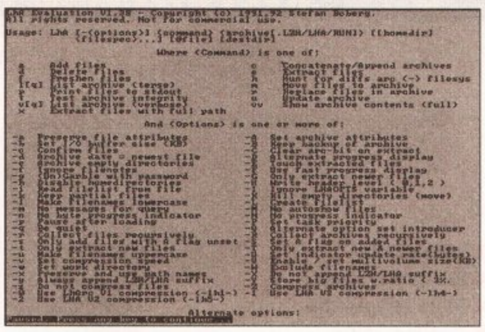
The second utility I'm going to look at is something that any user of comms really cannot do without: an archiver – in fact *the* archiver. Yes, it's true, in the wonderful world of Amiga comms these days there really is only one archiver that people are using, and that is *LhA*. It is one of the quickest archivers available and also one of the best at getting those files reduced to the smallest possible size.

So why use an archiver, you may be asking, and I'm going to tell you, oh yes! Simple: sending a file over a telephone line costs money, and the smaller the file the less time you are using the telephone and therefore the less it is going to cost.

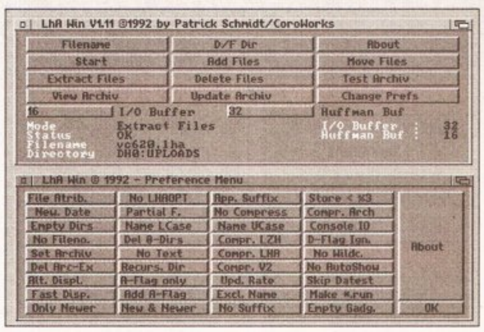
LhA is run from the Shell, using a command line interface. Although this is really quite straightforward, and there is a helpfile for all the commands, some people do find it a bit confusing. If you prefer selecting a button with a mouse, fear not, there is a utility out there just for you. It's called *LhA-Win,* and it provides a basic mouse-controlled environment for *LhA.*



Secret Squirrel makes short work of a difficult job. No, wait – it's really UUCoderWindow giving you a more user-friendly interface for uuencoding and uudecoding. UU could do a lot worse.



LhA's Command Line. The archiver is great, but does having to type in commands look confusing to you? Well, there is a solution for people who never got to grips with typing...



And here it is. A nifty little utility called LhA-Win replaces that difficult Command Line Interface with a slightly less difficult point-and-click environment. Your choice, really.

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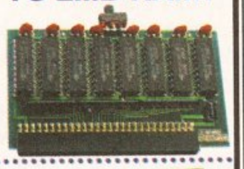
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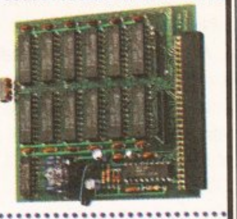
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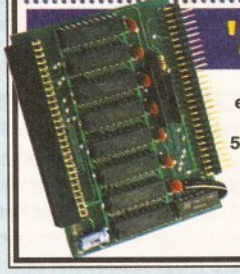
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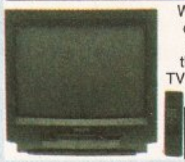
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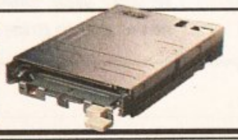
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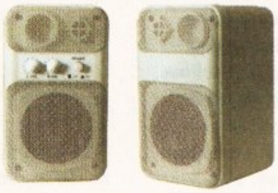
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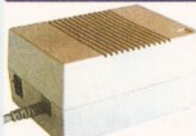


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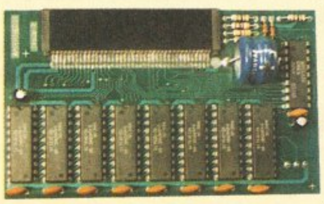
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Talking Shop

Welcome to the Amiga world's liveliest letters pages – where you get the chance to speak your mind. So join your host, the editor, Cliff Ramshaw, for some more no-holds-barred bantering. All you have to do to be included is send your missive to: 'Talking Shop', *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW. Get to it!...

"IN EFFECT, UNFINISHED"

I am sorry to have to write concerning an article in the last issue of *Amiga Shopper* which angered me. The article in question was the review of *Clarity 16* from Microdeal. The reviewer did well to point out the fact that the software crashed. What is totally unacceptable, though, is the manner in which the reviewer condones this, passing it off as being par for the course.

An unstable piece of software in constant use is more trouble than it's worth. I realise that the multitasking environment of the Amiga makes it a difficult machine to program for, but properly tested software could put an end to the days when the Amiga was seen as a quirky little games machine. If serious Amiga users were sure that they had a solid base to work with, they would be far more likely to invest in their machine. Investment is what the Amiga needs to make it a real success.

Surely the software companies would gain more in the long run if a reviewer could say that after a week of intensive use a program hadn't stepped out of line once? I realise that testing takes time, and time costs money, but I would much rather pay a fair price for a stable piece of software which does the job that it set out to do, than pay for one which is in effect unfinished!

Jason Dilling
Chatham

Point taken, Jason, although since the review mentioned that there were bugs in the software it is up to the potential buyer to decide whether or not this is acceptable. Any remotely complex program has flaws, and the only advice that can be offered to the more wary user is to wait until a program has been on sale for some time before buying it. That way you can be sure that most bugs have been removed.

It would be nice if software were more carefully tested before release, but as you say this costs more money and denies the manufacturer its edge over the competition, as well as delaying the release of new technology to the consumer.

"ORIGINAL PURPOSE"

Can you please explain why the words "From the Makers of *Amiga Format*" have appeared on your cover? This, along with the inclusion of the odd cover disk and glossy covers, gives me the impression that *Amiga Format* is not so much your "sister" magazine but you are becoming a "doppelganger" magazine. Thankfully the excellent contents of your magazine have remained faithful to the original purpose, that being to act as a no-nonsense no-frills informative guide to the whole area of Amiga computing, but for how long?

Personally I would have thought that it was unnecessary to try and "ride on the back" of *Amiga Format* when what really sells your magazine is the contents. I would prefer not to have a cover disk because the software it contains is easily available, and I wonder how long it will be before a cover disk is provided every month.

Paul Matthews
East Sussex

Let me first stress that we are *completely* independent of *Amiga Format*. The reasoning behind the "From the makers of..." text is as follows: *Amiga Format* is the world's best-selling Amiga magazine, and if we can convince some of its readers to try *Amiga Shopper* on the understanding that we maintain the same high standards of production, then we can only benefit.

As you say, our editorial content and style are quite different from those of *Amiga Format*, and they will continue to be.

The cover disk is something that has proved very popular, and we're currently debating whether or not to make it a permanent feature. If any readers have strong feelings on the question, do write and let us know.

"BUT HOLD ON"

Soon after the A500's appearance, third-party manufacturers began creating peripherals that could be added externally and keep the machine's guarantee intact. To offset this, Commodore produced the likes of the A2000 that catered for internal expansion. Commodore blatantly advertise this machine, and others such as the A4000, as containing internal Zorro slots for the addition of extra memory and so on. Great stuff, but hold on – if you open the machine to insert your extras into the slots, then your machine is no longer covered by the guarantee. Even if you take your machine to an authorised dealer to do the job, the same rule applies.

If Commodore are advertising the machines as upgradable, and then saying that opening a machine will invalidate its guarantee, then this must contradict the claim of the advertisement that the machine is upgradable. If this is so, why don't Commodore just produce a system whereby machines can be upgraded via a rack-mounted modular system?

D R Thompson
Norwich

This is an important issue. Posing as a customer, I phoned Commodore and spoke to a person who confirmed that opening up my A4000 would invalidate its warranty. It was suggested that I contact my dealer, who would fit any expansions for me, and then replace any warranty seals that got torn when the case was opened, so no-one would be any the wiser. When I asked what would happen if I bought an expansion card via mail order and my local dealer didn't care to fit it, I was told that I could write to Commodore explaining the problem and I would probably be sent some spare warranty seals.

Some time later I phoned Commodore again, this time identifying myself as a journalist and asking for the company's official position. I was eventually assured that opening up an A4000 in order to install expansion cards would *not* void your warranty. Mike Gosheron, Commodore's multi-media sales manager, told *Amiga Shopper* on the record that "the machine is a workstation that's designed for users' ungradability."

Despite this official statement, there's clearly still some confusion about warranties. I'd be interested to hear of any readers' experiences.

"THINGS LIKE PRINTFS"

Just a little note to sort out a few of the problems that some people have written in about concerning *NorthC*. People say that things like printfs and puts don't send their output to the screen immediately. What you have to do is:

(a) Open up your "clibs" drawer and load the file called "defaults.c" into a text editor. Scroll down and find the line that says:

```
"int stdoutunbuffered = 0"
```

and change the 0 to a 1.
(b) Move the file into the "include" drawer.
(c) Put at the top of every C program you write this line:

```
#include <defaults.c>
```

By the way, it says how to do this in the documentation.

Jonathan Levell (aged 14)
Ringwood

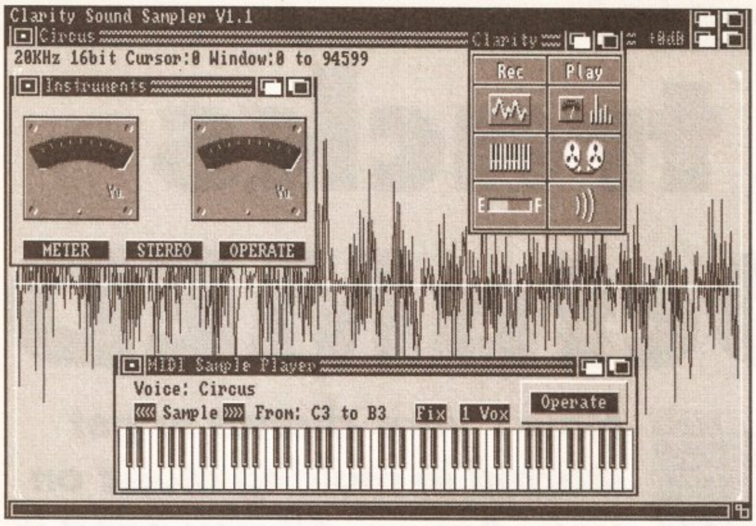
So now we know.

"DARE I SAY IT"

In these recession-hit times, don't you think it would be a good idea to concentrate on ways to save and even, dare I say it, make money with your Amiga, rather than printing loads of articles telling us what to buy with money we don't have?

Leopold Bloom
Dublin

Yes. Next month we'll be printing a mammoth article all about how you can make money with your machine. We'll be covering just about every conceivable application, from basic typing through desktop publishing to video and graphics work, not forgetting commercial programming and music. We'll also be offering lots of useful advice on things like tax and grants, and giving you a whole load



When Clarity 16 was first released it suffered from a number of bugs. Should reviewers condemn this sort of thing, or just accept it as normal?

of useful contacts. (To make sure of your copy and save yourself some money to boot, see page 41.)

Incidentally, if any of you have ideas for what you would like to see in the magazine or, just as valuable, comments to make about articles we've already published, then don't hesitate to write and let us know.

"MOST OF THE TIME"

I am replying to a letter from Jonathon Williams regarding downloads from bulletin boards, printed in the May issue [*AS* 23].

I run a BBS in Birmingham called Bright Lights BBS (☎ 021 325 1723, 7pm–7am every day) and once users have become members they get a ratio of 4/1. If this ratio is not suitable, then users have only to explain that they are new to comms and an agreed ratio can be arranged. As regards connecting at only 2,400 most of the time, the user will have to shop around for the 14.4 BBSs like my own – it is as simple as that.

If Jonathon wants to give me a call on my BBS, I will give him any help I can. We all started somewhere.

Alan Clarke
Birmingham

Thanks for that.

"OUTLINED ABOVE"

I read with interest the article on Commodore's new Amiga 4000-030; at under £1,000 it really is a stunning machine and worth every penny. It makes the A4000-040 look prohibitively expensive – surely its faster processor doesn't warrant an extra £1,000?

The most interesting thing about issue 26 was the proposed Amiga CD. For it really to take off, it must be well advertised. Just how many adverts on the telly have you seen for any Amiga? Not many, that's for sure. As for the machine's technical specification, Commodore have achieved a correct balance of hardware trickery and price. It sounds far superior to Sega's Mega CD and is far cheaper, too. I know which machine I would rather buy.

For CD-ROM to take off on the Amiga, CD-ROM devices need to be made available for all Amigas, including the A600. In the CD-ROM box should be the AGA chipset to enable advanced graphics to be displayed on earlier Amigas. I feel this could be done, since GVP have produced a hard disk with an accelerator in the same box.

Once CD-ROM has been established with all Amigas, software support needs to be much better than was the case with CDTV. For Amiga CD to be taken seriously it should include an internal IDE hard disk with a minimum capacity of 40Mb. Amigas at present are criticised for lack of built-in hard disks as standard in the low-end machines. A hard disk would enable Workbench and applications software to be used.

If Commodore don't take the measures outlined above, then the Amiga CD will die just like CDTV, and PCs and other machines will overtake the Amiga again. The Amiga has only just managed to get back on top because of the AGA chipset and the A4000-040.

One last thing: where is the assembly language tutorial? I enjoyed the first installment and expected to see it every month.

Andrew Smith
Tamworth

Well, an '040 processor costs significantly more than a 68EC030, but you're right – it's not £1,000 more. I expect the price of that one will be dropping soon enough.

Remember that when you talk about Commodore getting the balance between specification and price right on the Amiga CD, they haven't done so yet. £250 is the price we *believe* that Commodore are aiming to bring the unit out at – it may well change between now and Christmas. Furthermore, Sega have recently dropped the price of the MegaDrive and Mega CD to £75 and £175 respectively, so the competition is already hotting up.

I agree about the necessity for CD-ROM technology across all Amigas, and so do Commodore. They have stated that this is one of their aims.

Because of the growth of interest in CD-ROM on various platforms, I think that Commodore are unlikely to suffer again from the shortage of software that beset CDTV. It will be relatively easier to convert titles from the likes of the PC and Mega CD to work with the Amiga (admittedly games, but they are, after all, what made the Amiga so successful in the first place).

I can't see Commodore putting hard disks into low-end machines, simply because the majority of people who buy those machines simply don't want hard disks. They want to play games.

I'm glad you liked the assembler article; if more people write in requesting another, we'll do one.

"WITHOUT CHARGE"

I would like to sing the praises of DAVAL Electronics, my (relatively) local computer shop.

I have had cause to use their repair skills on a couple of occasions since buying my Amiga 500 from a friend, knowing it to be faulty. They fixed the original fault and, when it re-appeared a few days later, re-investigated and found the loose connections causing the failure. This second repair was done free.

A further repair was completed within the promised ten days. Yet another fault surfaced a few days later, quite independent of the others [was this cheap A500 such a bargain? – ed]**, and when I took my machine into DAVAL it was repaired within ten minutes without charge.**

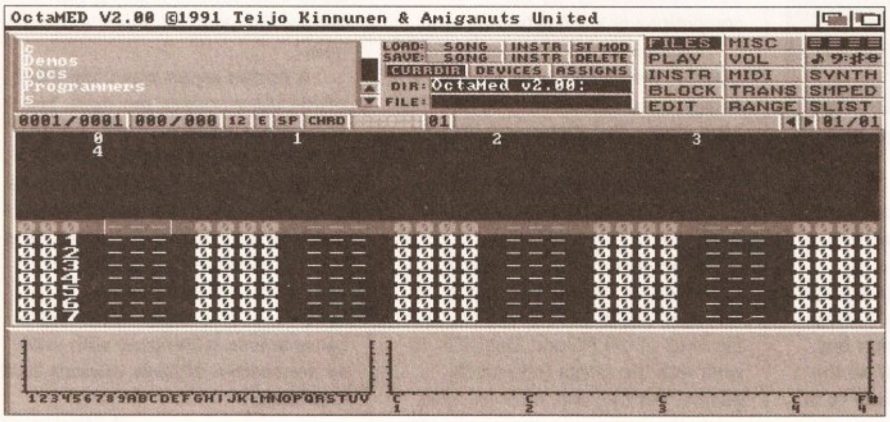
In these difficult times for businesses it is really refreshing to come across a company with such an honourable attitude towards their customers.

K I Dickinson
Lincolnshire

It's always good to hear of a reputable dealer. May I also point out that I've had nothing but exemplary service from my parents' computer shop, Marcliff computers in Sunderland. AS



Make tracks with OctaMED



OctaMED's file panel at the top left of the screen. This is where you load and save all songs and instruments, as well as delete any unwanted files on disk.

Now's your chance to get started in making music on your Amiga. All you need is OctaMED v2.0, and it's yours on this month's cover disk – no extra kit required! Tim Tucker shows you how to get going.

Trackers have long been an alternative to sequencers for making music on the Amiga. They are convenient because they use the internal sound capabilities of the Amiga, meaning that you don't need any external hardware to make music. *MED* and its successor *OctaMED* have established themselves over the last few years as the best trackers around, and on this month's cover disk we've supplied you with *OctaMED* version 2.

Although initially intended for those with little or no knowledge of more professional music software, *OctaMED* has amassed loads of features since its conception, and if you've never seen a tracker before it may look a little complicated on first sight. But it's really quite easy to use, as you'll see.

First a few notes about trackers and what they do. With a tracker program, you can use IFF samples and string them together into sequences to play music. In most cases the number of samples you can play together at the same time is restricted to four – the number of sound channels in the Amiga. *OctaMED,* however, can play up to eight samples at a time by a clever bit of jiggery-pokery which enables two samples to play on each channel. The only downside is that when you're using more than four sounds at once there is a degradation in sound quality.

There are all sorts of other features in *OctaMED.* The sound sources are not just limited to IFF samples – you can use Synthsounds, which are built up from simple waveforms, and even output notes over MIDI to play any MIDI instruments you may have. It also enables you to view and edit music ias standard musical notation, which can be printed out on a printer.

You can run *OctaMED* by double-clicking on the *OctaMED* icon. However, you may want to make your *OctaMED* disk bootable, which enables you to boot straight into the program from the *OctaMED* disk. First, follow the instructions on the disk pages on how to de-archive *OctaMED* from your cover disk onto its own disk. Then open a CLI or Shell window and type the following:

```
Install "OctaMed v2.00:"
```

You need to put quotes around the name of the disk, because it has spaces in it. If you have only one drive you will be asked to put the *OctaMED* disk in drive df0:, otherwise you can put it in any drive. Once it's finished the Install process you can turn off your Amiga and re-boot using your newly-bootable *OctaMED* disk.

If you want to install the program onto a hard drive, copy the entire contents of the *OctaMED* disk to its own drawer on the hard drive. You then have to assign the name of the original disk to the name of your drawer, so that *OctaMED* knows where to look when it's trying to find files and things. You have to edit your start-up sequence to do this. Assuming you put them in a drawer called **OctaMED** on dh0:, add the following to the list of assigns in your start-up sequence:

```
assign "OctaMed v2.00:" ☛
dh0:OctaMED
```

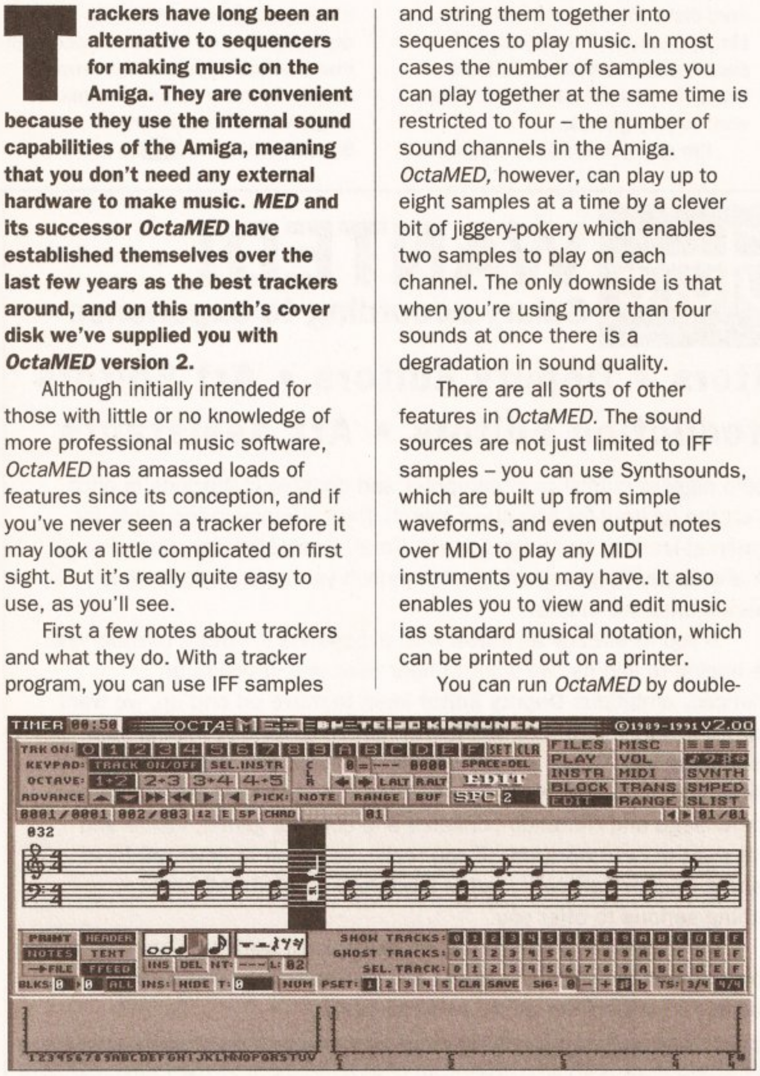
Again, don't forget the quotes.

Before we get started with the specifics, let's take a brief look at all the functions of *OctaMED.* In the top left of the screen is the user interface panel, and this is where you issue commands to the program. There are ten panels that can be displayed here, but only one can be displayed at a time. You bring up the other panels by clicking on one of the ten gadgets immediately to the right of the panel, marked **FILES**, **MISC**, **PLAY**, **VOL**, **INSTR**, **MIDI**, **BLOCK**, **TRANS**, **EDIT** and **RANGE**.

When you load the program, the panel **FILES** is highlighted and this is where you load and save files, including songs, samples and hybrid sounds. Next to it is **MISC**. Click on this and a panel appears which enables you to set up certain preferences, such as screen colours and mouse pointer – if you don't like that little man pointer, click on the **OFF** gadget next to **JUMP:**. It's also here that you clear songs from memory and Quit the program.

Next down is **PLAY**. This is not only where all the play options are, but also tempo and channel information. The **VOL** panel enables you to adjust the relative volumes of each track. The **INSTR** panel is where you can load samples and alter some of their characteristics, including how long they play for, how loud they are and any transposition values. The **MIDI** panel takes care of all the commands you might want to output to a MIDI instrument.

The **BLOCK** panel deals with manipulation of Blocks. A Block is a



If you prefer working with music notation, you can edit and create tracks using the notation editor. You can also print it out.

section of music, which we'll look at in more detail shortly. **TRANS** enables you to transpose larger sections of music as a whole, including Tracks, Blocks or the entire song. **EDIT** is where you set up parameters for entering and editing music in the tracker, and finally, **RANGE** enables you to perform cut and paste operations to existing pieces of music.

To the right of the ten gadgets we've just looked at is another column of five gadgets. These switch between the five main screen displays below the top panel. The top gadget, marked ≡≡≡≡, shows the main tracker editing display, which is where you do most of the entering and editing of music in *OctaMED*. Below that is a gadget marked with various musical symbols. Clicking on this brings up the Notation editor. Here you can edit and enter music with standard music notation if you prefer, and print out the music on your printer. The gadget **SYNTH** is used to design and edit sounds using simple waveforms as components. This is a powerful feature which enables you to create some very interesting sounds of your own. An extra advantage is that the sounds themselves take up less memory than normal samples.

The next gadget, marked **SMPED**, brings up the sample editor. Here you can sample sounds (as long as you have a hardware sampler) and edit existing samples. Finally the gadget **SLIST** brings up a list of all your sample disks and directories and the samples themselves. This makes file manipulation a lot easier when you're loading samples from lots of different disks and directories, and helps to minimise disk swapping.

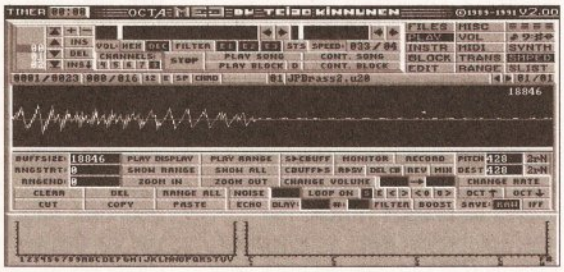
Underneath the main display are two graphs which display notes as they are played from the keyboard and tracker. This helps you to see what notes are being played, how loud they are and what channel they're on. It will become more clear once you start playing music.

MAKING A TRACK

Before you start making your own music, take a look at the demo Track supplied with the program. Click on the **FILES** gadget in the top right hand panel, and the files panel will be shown to the left of it. Click on the **CURRDIR** gadget and a list of the directories on the *OctaMed* v2.00 disk is displayed in the window to the left. Click once on **Demos** in this window and the file **Esc2Heaven** is shown. Click once on its name. Now click on the gadget **LOAD: SONG** to load the demo tune.

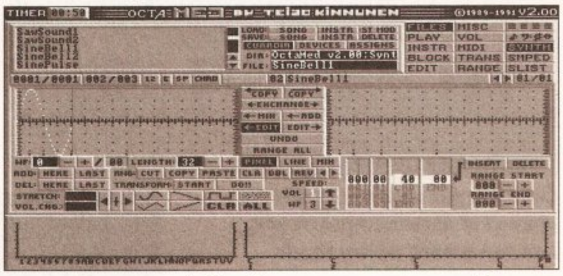
Make sure you've got the gadget marked ≡≡≡≡ in the top right hand corner selected to display the tracker editing page in the main display. Now click on the **PLAY** gadget beneath **FILES**. A new panel is displayed which controls how to play the music. Click on **PLAY SONG** in this panel to hear the demo. The demo plays through the song, and when it's finished loops back to the beginning. When you've heard enough, click on **STOP** in the **PLAY** panel. If you pressed **STOP** in the middle of the song, you can continue playing from where you stopped by clicking on **CONT SONG**. Clicking on **PLAY SONG** again plays the song from the beginning, regardless of where you stopped.

Above the **CONT SONG** gadget is a gadget marked **SPEED:** with two numbers, **033/04**, next to it. These are the primary and secondary tempo displays. You can change either of these while the music's playing by using the two sets of arrows and slider bars directly above them. Experiment with them. You'll notice that the secondary tempo control (04) changes the tempo by much larger increments and the music gets faster the lower the number (setting the number to 02 makes the track exactly twice as fast), whereas the primary tempo is a much finer control and the music gets faster the higher the number.



You can edit samples in OctaMED's sample edit screen, which saves you having to quit the program.

Now you've heard the demo track, it's time to enter some music of your own. Click on the **MISC** gadget in the top right panel to bring up the "miscellaneous" panel. Click on the **CLEAR SONG ONLY** gadget in the panel and click on **CONFIRM** to perform the command – all operations in the **MISC** panel have to be confirmed, to stop you making a mistake and erasing something you really want to keep. A message appears in the title bar at the top of the screen asking "Flush unused instruments (Y/N)?" This is where all the messages from *OctaMED* to you are displayed. Press **N** on the Amiga keyboard to answer No. All the note information disappears, leaving just the samples in memory. We can now use these samples to create our own track.



Create your own custom synth sounds by combining simple waveforms in the synth screen.

You can play the samples using the Amiga keyboard (it's also possible to use a MIDI keyboard to enter notes). The keys on the Amiga are ordered in the way a piano keyboard is arranged, thus:

```
 2 3   5 6 7   9 0 = \
Q W E R T Y U I O P [ ]
 S D   G H J   L ;
Z X C V B N M , . /
```

Z is the lowest octave of note C, and **Q** is C an octave above. Play them now to hear what they sound like. You should hear the notes being played by the sample **JPBrass2.u20**, which is the currently-loaded sample. You can transpose the keyboard up to higher octaves too. Click on **EDIT** at the bottom of the panel in the top right hand part of the screen and you'll see the Edit panel appear to the left of it. Use the gadgets marked **OCTAVE: 1+2**, **2+3**, **3+4**, **4+5**, to access the higher octaves of the sound from the keyboard.

Between the top panel and the main block display is the status bar. This displays information which it's useful to see at all times. Notice on the right of the status bar is a gadget marked **01 JPBrass2.u20**. You can change the current sample to another in memory by clicking on the second of the two numbers (the 1, not the 0) with the *left* mouse button. This changes the number to **02 SlapBass**. Keep clicking on the second number to scroll through all the samples in memory, and play them on the keyboard to hear what they sound like. To go back down the list, click on the second number with the *right* mouse button. (If you accidentally clicked on the first number with the left button, use the right mouse button to bring it back to 0.) The instruments are numbered thus: 01 – 09, 0A – 0V, 10 – 19 and 1A – 1V.

So much for playing the sounds, now we want to actually put them into some music. For this we use the main Block display. A "Block" is a section of music – it could be a verse or chorus for instance. You compose songs by creating a number of Blocks and then playing the Blocks in sequence. You'll notice that the Block is split into four columns, each column representing a Track – in eight-track mode there would be eight columns. There can actually be up to 16 tracks, but *OctaMED* can only play four of them at the same time in four-track mode, and eight of them in eight-track mode. Down the left hand side of the block is a column of numbers – 000, 001, 002, etc. These are known as Lines, and you can enter a note per Line on any of the four tracks. Each Line represents a sixteenth note, and you can leave Lines blank to create the rhythms you want. The best way to understand this is to enter some music, so we're going to start by entering a simple bass drum pattern.

First, select the bass drum sample by left clicking on the sample number until it reads **05 BassDrum.u20**. Now click on the **EDIT** gadget in the top right hand panel. This brings up the Edit panel, which you use to enter notes. Click on the gadget marked **EDIT** to the far right of this panel (notice that the E in the status bar below is also highlighted when you do this – you can enter **EDIT** mode by clicking on the E symbol at any time). Below it is a gadget marked **SPC**, with a numeric field beside it. Change the number from 2 to 4 by clicking on the number, using the **Del** key to erase the old number, and then typing in

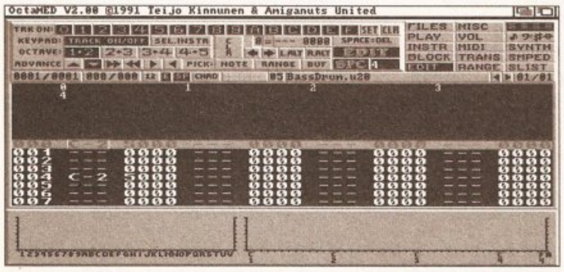
WHEN YOU GET HOOKED...

The *MED* Users Group (or MUG for short) aims to provide a service for all users of *MED* and *OctaMED*. Members can send in their problems or ask for advice about any aspect of *MED* or the Amiga, and there's a bi-monthly disk-based magazine called *Total Irrelevance*. This contains demos, modules, samples, features, a small PD section, and reviews of readers' original and "covered" modules. As a special offer to *Amiga Shopper* readers, MUG will send you a *free* copy of *Total Irrelevance* if you write a nice letter and enclose a disk of your own mods for the club to listen to. A blank disk will suffice, it says here, "but we'd rather have some mods!"

If you're hooked on *OctaMED*, or just curious, contact Richard Bannister, The MED Users Group, 6 Glevum Road, Stratton St Margaret, Swindon, Wilts SN3 4AF.

the new value. Click on the **SPC** gadget to highlight it. (Again, notice the SP box on the status bar is also highlighted.)

Move the edit cursor box (the red outline box), using the cursor arrow keys, to the top of the first track in the field marked with three dashes, ≡. Now press the **Q** key on your Amiga keyboard. You'll see the note



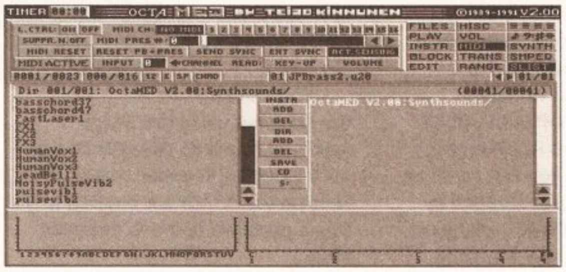
Once you get used to OctaMED's method of entering music it will become second nature to you.

C – 2 entered on line 000, with the field beside it showing the number 5000. The 5000 indicates a number of things. The first number (5) is the number of the instrument (remember this is **05 BassDrum**). The next three numbers can be used to add certain effects to the sounds, which we needn't go into right now. You can edit these fields by moving the cursor over them and typing in new some values.

Notice also that the edit cursor jumped four spaces forward to line number 4. This is because we set the **SPACE** value to 4. If you turn off **SPACE**, the cursor moves to the next consecutive line after a note is entered. You can use the **Del** key on the Amiga keyboard to enter a space, but if you're entering a part with regular spaces it's easier to use the **SPACE** function.

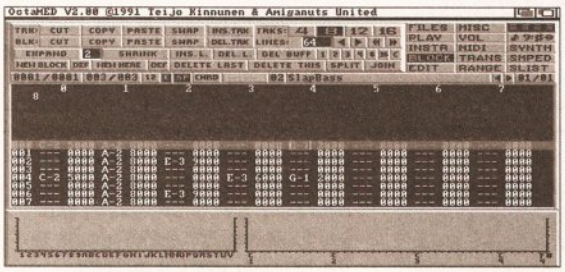
Now type in **Q** until you reach the end of the track – line 60 should be the last field you enter. If you make any mistakes, move the cursor to the line and enter the note again, or use the **Del** key on the Amiga keyboard to delete it. You've just entered the bass drum part in your first block. Click on the **PLAY** gadget, and click on **PLAY BLOCK** in the **PLAY** panel. You should hear a bass drum played on each beat of the bar. If you don't hear anything, check that you haven't inadvertently muted the Track. To the left of the sample name on the status bar is a group of 16 little blocks coloured red. Each block represents a Track, and if the block is black it means the corresponding Track is muted. The top left block is Track one – if it's black, click with the *left* mouse button on the column you've just been entering notes into.

To create the next section of our Track we need to create a new Block. Click on the **BLOCK** gadget in the right hand panel and then click on **NEW BLOCK** in the bottom left hand corner of the Block panel. You'll see the second gadget from the left on the status bar beneath it change from reading 000/000 to 000/001. The first number of these two is the current Block selected, the second is the total number of Blocks in memory. To move between the Blocks in memory, click with the *left* mouse button on the third digit of the first number (000) and it will change to 001. At the moment the Block is empty, so go back to Block 000 by clicking on the third digit with the *right* mouse button (remember, to go *back* you have to use the *right* mouse button).



If you have lots of samples on different directories, the Sample List helps you organise them.

We want the bass drum part to continue in the second section, so we need to copy it from the first Block into the second. Move the mouse pointer to the top of the first Track (line 000) and click on it with the *right* mouse button. Now click on the **RANGE** gadget in the top right hand panel. In the panel to the left of it, click on **SELECT TRACK**. The whole of the first track is highlighted. Click on **COPY** to copy the track. Now move to Block 001 by clicking on the number in the status bar, and click on **PASTE** in the **RANGE** panel. You can choose smaller sections to copy and paste by clicking on a Track with the *right* mouse button and drag selecting the notes you want.



In eight track mode OctaMED displays eight racks on screen. Use the Edit panel to change this.

Now we need to enter a new part in the second Track of this Block. Click on line 000 of the second column with the *right* mouse button. Choose sample number **08 CloseHiHat.u20**, go to the **EDIT** panel and turn **SPACE** off (Click on the **SPC** gadget so that it's not highlighted). Press the **Y** key on the Amiga keyboard repeatedly until you've filled the track. Select **PLAY BLOCK** to hear the bass drum and hi-hat play together. Go to the **RANGE** panel, click on **SELECT BLOCK** followed by **COPY**. Create a **NEW BLOCK**, in the **BLOCK** panel, and move to it using the numbers in the second gadget from the left on status bar (they should read 002/002). Right click on the top of the first track and choose **PASTE** from the **RANGE** panel. The bass drum and closed hi-hat part are copied into the new block. Move the cursor to the top of the third column in this Block, choose sample number **09 OpenHi Hat.u20** and press the following key sequence:

Del Del P Del Del Del P Del

until you reach the end of the Track (make sure **SPC** is not turned on in the **EDIT** panel). There should be the note E-3 entered on line numbers 002, 006, 010, 014, 018, 022, 026, 030, 034, 038, 042, 046, 050, 054, 058 and 062. Now choose sample number **06 SnareDrum.u20** and move the edit cursor to the fourth column. Enter the note E-3 by pressing the **P** key on the following lines: 004, 009, 012, 020, 025, 028, 036, 041, 044, 052, 057, 060, 062, 063. You can use the **Del** key or the down arrow cursor key to create the spaces.

Finally we're going to add a bass part. We want to copy the Block again to keep the drums playing. There's a quick way to do this from the **BLOCK** panel. First click on the **BLOCK: COPY** gadget, then select the **NEW BLOCK** gadget in the bottom left of the panel. Move to the new block (003) using the numbers on the status panel and click on the **BLOCK: PASTE** gadget. We've used all the available Tracks in four-track mode, so we have to create some more Tracks for our bass part. You will notice a change in the quality of the sound when adding more than four Tracks.

To make this block an eight-track block, first go to the **BLOCK** panel and click on **TRKS: 8**. There are now eight columns in the Block, but you can still only play four at a time. To increase the number of channels available for playing tracks, go to the **PLAY** panel and click on the **CHANNELS: 5** gadget. A message in the message bar at the top of the screen asks you if you want to halve your samples. Answer no (press the **N** key). We can now add a bass part to the drums. The tempo is reduced as a result of this operation. In the **PLAY** panel change the secondary tempo to 05 to bring it back to normal speed.

Choose sample number **02 SlapBass**. Go to the **EDIT** panel, click on **SPC** and change the number in the box next to it to 2. Move the cursor to the top of the fifth column in the main display and type the following key sequence on the Amiga keyboard:

C Del C Del B C Del Del M N Del B Del G.

This should take you up to line 026. Drag-select lines 000 to 026 using the *right* mouse button. Go to the **RANGE** panel, select the **COPY** gadget. Now move the cursor to line 032 and click on **PASTE**. Go to the **PLAY** panel and click on **PLAY BLOCK** to hear the resulting bass line in time with the music.

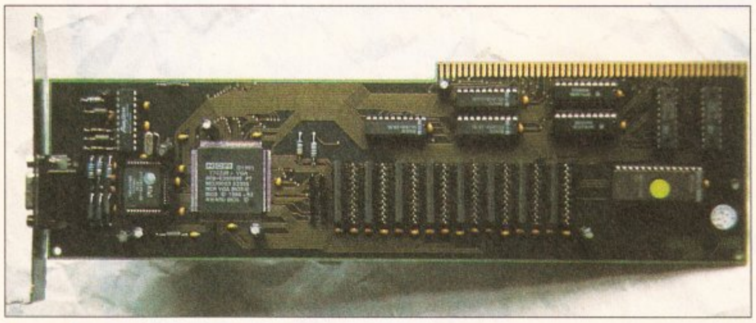
Finally, we're going to create a song by putting together all the Blocks we've used so far. Go to the **PLAY** panel by clicking on the **PLAY** gadget. To the far left of the panel is the play sequence window, which is where you string together Blocks to make a song. There is only one entry in the window at the moment, 000. Click on the down arrow gadget right next to the window to move down a line, then click on **INS** and **+** to insert a new block and increase its number to 001. Click on the down arrow again, select **INS** and hit **+** twice to increase the third block in the list to 002. By the same method add two lots of block 003. The window should now read:

000
001
002
003
003

Now click on **PLAY SONG** to hear the blocks played in the specified order.

This is obviously a very simple example of putting a song together on *OctaMED*, but with luck it's given you an idea of how to work with the program. Next month we'll be looking in more detail at some of the features in *OctaMED*. You'll find full documentation of the program in the *Read Me* file on the disk if you can't wait. Experiment with the features to see what you can do. Until next month, happy tracking. AS

20/20 vision



The Amiga is renowned for its graphics capabilities, but if you want even more, the Retina card could give you up to 24-bit images and 2,400 x 1,200 pixel displays. Gary Whiteley looks into it.

Following the success of their *VLab* digitisers, MacroSystem have come up with another potential winner. It's a display card called *Retina*, for owners of Amiga 1500, 2000, 3000 and 4000s who want to display images in formats up to 24-bit and in screen resolutions of up to 2,400 x 1,200.

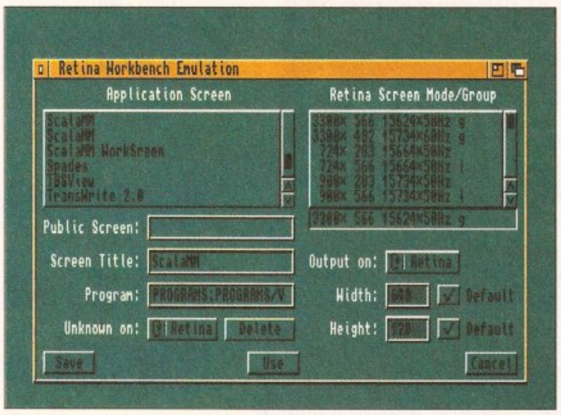
A4000s may have AGA, but, good as HAM8 is, it still isn't up to the 24-bit quality which many pro-level users require. For the others, even adding one of the proprietary third-party deinterlacers such as Microway's *Flicker-Fixer* card, or using the A3000's built-in hardware, still doesn't permit 24-bit images to be displayed. Adding a *Retina* card (apparently pronounced "Ret-ee-na") does, and offers a lot more besides.

THE HARDWARE

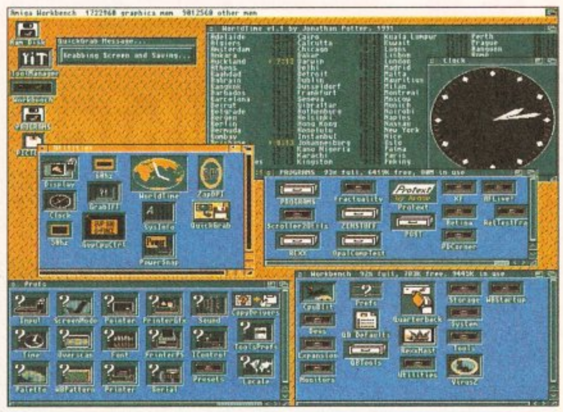
Retina is a three-quarter length card which fits into one of the Amiga's 100-pin Zorro II/III slots and connects to a monitor via a 15-pin VGA-type connector. It doesn't provide a composite (or YC) video output directly. It outputs horizontal frequencies between 15.6kHz and 44kHz and vertical frequencies from 50Hz to 100Hz, so it can be used with a very wide range of monitors – from cheap VGAs to top-of-the-range multisyncs. It can even work with Commodore 1081/1084 monitors (or equivalents), though a special lead is required.

Because *Retina* is independent of the standard Amiga RGB output and can be used simultaneously with it (plus any video card you may have installed), a second monitor could also be attached to the Amiga to run applications which perform more effectively on a dedicated Amiga screen. Whether a particular screen is displayed on a *Retina* or Amiga output is fully programmable from within *Retina's* software. Up to four *Retinas* can be installed at once in a machine, each with its own outputs.

Retina comes fitted with either 1, 2 or 4Mb of its own exclusive 32-bit display RAM, and the 1Mb and 2Mb cards can easily be expanded to 4Mb later by swapping the installed 1Mb ZIP RAM chips for 4Mb ZIPs. 2Mb is ample for displaying hi-res screens, especially in 24-bit (remember that large 24-bit images are often over 1Mb in size); 4Mb permits more *Retina* screens to be opened at once as well as full double-buffered animation on flicker-free screens to be achieved (though double-buffered animation is still to be implemented).



It doesn't look like much, but this window is the nerve centre of RetinaEmu, Retina's Workbench emulator.



This 1,000 x 512 8-colour Workbench shows how much a large screen can hold – and it is absolutely flicker-free.

THE SOFTWARE

Two disks of software are provided. One contains all the *Retina* software, the other *VDPaint*, a 24-bit paint program in an exclusive version for the *Retina* (see the box on page 99).

Before the *Retina* can be used, its software has to be installed (preferably on hard disk) and then configured for use. This can be a bit complex, and a fair amount of trial and error is necessary before you begin to understand what is going on. The skimpy manual doesn't help that much either.

The first stage is to choose the appropriate monitor type from the extensive list provided in the *Retina-ScreenMode* program. Next you choose the sizes for 8-bit, 16-bit and 24-bit display modes, either as individual settings or from "groups" which hold a family of settings from which the best choice under the prevailing circumstances will automatically be made. Then you run *RetinaEmu* (not a large flightless bird but Retina's own Workbench emulator), load a program and set the resolution and screen refresh rates you require for that program's window(s). (The screen refresh rates are vital especially for graphics: if the display isn't updated fast enough, changes can seem to have had no effect.) Finally you close the program and rerun it to make sure the display is what you require. This all takes some experimentation, but once you're happy, all the settings can be saved so that any individual program listed in the file will open correctly on subsequent occasions. Like normal Amiga multitasking, *RetinaEmu* lets you have as many applications open as memory allows.

Displaying existing images with *Retina* is simple – just drag an image icon onto the *RetinaDisplay* window and, if *Retina* can handle the format, it will be opened on an appropriate *Retina* display. All standard IFF formats are supported (including HAM8 and 24-bit files) but not JPEG or GIF files, though I understand that JPEG conversion will be available soon – and perhaps even GIF.

JARGON BUSTING • JARGON BUSTING

Deinterlacer – Hardware to remove the visual flicker from a computer display by physically doubling the number of horizontal lines and the display frequency. Requires a multisync monitor.

Digitiser – Hardware for capturing video images into a computer.

Double-buffering – The use of two rapidly-alternating display buffers to present the illusion of smooth animation, so long as the loading rate is fast enough.

Multisync monitor – A monitor capable of working at higher frequencies than standard video monitors, giving higher-quality, higher-resolution, flicker-free displays.

24-bit graphics – The use and production of high-quality images which can contain up to 16.7 million colours.

RetinaDisplay is theoretically capable of playing back animations – and smoothly double-buffering them with the 4Mb version. Trouble is, the software can't handle it – yet. While it is easy to display sequences of IFF images in a page-flipping fashion, only the unusual *SunRaster* 8-bit format (unusual on an Amiga, at least) can currently be used to produce double-buffered animation, but I wasn't able to test this out.

INTEGRATED

Retina integrates well with several professional Amiga packages. In addition to providing a direct 24-bit display for MacroSystem's own *VLab* digitisers (and mono or colour real-time monitors for it as well), *Retina* comes supplied with a saver for *Art Department Professional,* enabling any image in *ADPro's* buffer to be displayed directly on the *Retina*. An *ADPro* loader for MacroSystem's YUVN image format is also supplied, making the conversion of the YUVN files grabbed by *VLab* that much easier. And if that's not enough, a direct link from *ADPro* to *VLab* is provided to directly control *VLab,* grab images and port them straight to *ADPro* for further processing.

There's also a display module which enables a buffer from Black Belt's *ImageMaster* to be displayed on the *Retina* – though I thought this was rather poorly done.

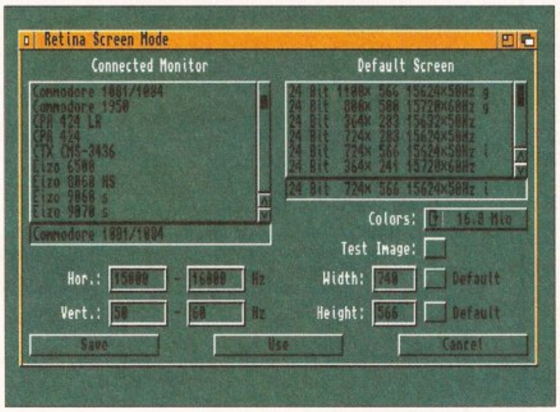
Lastly, an emulation of Amiga Centre Scotland's *Harlequin* card is provided as a library, so any program which can use the *Harlequin* for display can now use *Retina* instead – and completely automatically.

In contrast to some companies, MacroSystem are keen to encourage new applications to be written for their products, so they provide free developer support with all their hardware and software. If only more companies would follow suit...

SOFTWARE PROBLEMS

Several programs didn't behave as I would have expected, including Black Belt's *ImageMaster,* GVP's *ImageFX* and Scala's *Scala MM210*. All work normally under ordinary Amiga conditions, but when run via *Retina* their menu screens mysteriously migrate to the very top of the screen, rather than taking up their usual lower screen positions. The effect is that any images for editing or display become obscured, rendering the software quite useless. The problems seem to occur because such programs open up several screen levels which overlay each other, often in different resolutions. The Amiga can handle this, but *Retina* apparently cannot, though MacroSystem are reported to be well on the way to fixing this and several other peculiarities.

Programs which take over the operating system (such as many games) will also not work, and applications such as *Broadcast Titler 2* also fail to run. A small program (*RetinaIRQ)* is supplied in an attempt to fix some of these problems, but it didn't do anything for the applications I tried it on. (Mind you, I don't have any suitable games...)



Setting up for your monitor is no problem. About 66 are pre-set, or you can build your own display settings.

Impressively, most other programs I ran through *Retina* worked fine – from my *Transwrite* word-cruncher to utilities such as *GrabIFF,* though I'm afraid there isn't room to print a list. Yet again, trial and error is the key.

WHY BUY RETINA?

There are as many reasons for buying a *Retina* as the screen modes and monitors it supports. Some folks will buy it purely for its ability to display 24-bit graphics, others for displaying their software on large format hi-res screens with a rock-steady display – perfect for CAD, DTP or other display-critical applications.

In operation the 4Mb *Retina* I tested ran very well, combining impressive screen display capabilities with very fast updating – significantly faster than the normal Amiga display on my Amiga 2000. For instance, running *Professional Page* 4.0A on a *Retina,* screen redraw under high magnification was very good, even with colour screens at 900 x 512 resolution (or more), though unsurprisingly some "flicker" was still apparent on both monitors – though I suspect this was interference patterning rather than true flicker.

For Workbench applications I tried setting up a 1,280 x 566 Workbench on the 15.6kHz/50Hz Commodore 1084 monitor as well as 1,280 x 1,024 (at 31.2kHz/50Hz) and 1,280 x 1,024 (at 38kHz/70Hz) on the NEC II multisync monitor. The results were sharp and readable, making a single screen able to display much more visual information than usual. On the multisync, the results were no less than stunning.

As far as transparency of use goes, once you've got the various displays for the programs you use set as you want them, *Retina* is virtually undetectable. To all intents and purposes the machine behaves exactly like a "normal" Amiga – except for the noticeably improved displays, of course.

Mind you, *Retina* probably won't work with most games (and other programs) which override AmigaDOS, and it isn't at all happy with programs that output and overlay several screens at once. But for graphics, CAD, DTP and top-level display purposes, *Retina* provides an excellent screen display, particularly when teamed with a capable multisync monitor. AS

REQUIREMENTS

Amiga 1500, 2000, 3000 or 4000. At least 1Mb of Chip RAM, 2Mb (or preferably more) of Fast RAM (5Mb for *VDPaint),* AmigaDOS 2.0 or greater. A hard disk is, as usual, recommended for these kinds of graphics applications. A monitor capable of multisync display is also recommended, though a standard Commodore 1081/1084-type monitor can be used.

Gary Whiteley can be contacted over email as drgaz@cix.compulink.co.uk.

LIE BACK AND THINK OF DPAINT...

VDPaint (an unfortunate name, though undoubtedly meaningless in its native Germany) is supplied as a bonus with *Retina.* Supposedly worth $500 if sold separately, *VDPaint* is a well-appointed, though slightly idiosyncratic, 24-bit paint program which runs directly on a *Retina* display. It has all the tools you'd expect from any paint program worth its salt – and then some.

The first problem is working out what does what – the screen icons are tiny and the manual is in German. The second is that the tool requester obstinately plonks itself in the middle of the screen and has to be entered and exited every time you want to change tools and carry on sketching. There are keyboard shortcuts for everything though, so by careful study of the right bits of the manual it is possible to work out what each key does and find your way around without *too* much trouble.

VDPaint can load and save a variety of files – 24-bit, JPEG, IFF, PPM (for PCs) and HAM8 – and can access any VLab digitiser, grabbing straight to its workscreen for instant results. It can also do useful things like add drop shadows to brushes, anti-alias text (and also drop-shadow and outline it), set brush edge transparency, draw with colour cycling (though not "animate" it) and do quite a lot of other good things too.

Everything seems to work well enough and, while *VDPaint* isn't quite the fastest 24-bit paint program around, it is definitely worth getting for free – though I wouldn't be too keen on paying the quoted price of $500 (that's about £330).

VDPaint isn't perfect and in my opinion it doesn't quite measure up to either *TVPaint* or *OpalPaint* (both of which come "free" with certain other graphics cards) but there's no doubting that it is indeed a very valuable bonus, particularly considering the cost of the card.

SHOPPING LIST

Retina display card, by MacroSystem.
1Mb RAM version £345
2Mb RAM version £409
4Mb RAM version £499

From Amiga Centre Scotland, Harlequin House, Walkerburn, Peeblesshire, Scotland, EH43 6AZ.
☎ 0896 87583.
Fax:0896 87456.

CHECKOUT RETINA

Flexibility ●●●●●
With a wide range of monitors and display modes to select from, any monitor in the world should work with *Retina.*

Documentation ●●●○○
A mixed bag: *Retina*'s (quite thin) manual is in English; the *VDPaint* manual, most of the updates and doc files are in German.

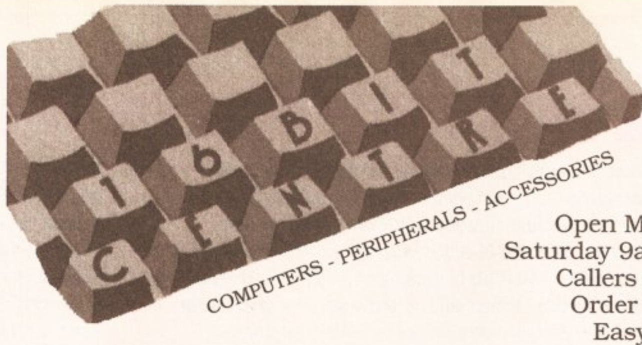
Ease of Use ●●●●○
Initially confusing, both to set up and use. Gradually begins to make sense, though a fuller manual would help a lot.

Price ●●●●○
Very competitive for clearer, faster, higher-res displays and a 24-bit paint program.

Overall rating ●●●●○
Something for everyone, no matter what your needs and what Amiga you use.

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1520 Plotter Group (ICPUG) John Bentley ☎ 06286 65932.

16-32 Micro Programming AMOS, bimonthly fanzine, PD, (Fish->590). Membership 100FF or £10. Contact F Moreau, 132 rue Jean Follain, 50000 Saint-Lo, France ☎ 315220 02.

24-bit Club For users of Video Toaster, OpalVision, DCTV and AGA machines, *Imagine 2, Lightwave* and other 3D modelling software. Contact Gordon Keenan, 24-bit Club, 6 Skirsa Square, Floor 1, Glasgow G23. Send stamp for details. Membership £20 a year.

Action Replay Users Club For help, tips, lists of pokes. Free. For more details contact Gordon Hagan, 66 Muirside Avenue, Kirkintilloch, Glasgow G66 3PR.

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Amiga Artists Club 34 Roundhay Mount, Leeds LS8 4DW. For Amiga artists, musicians and coders. Pirates not welcome. Free. ☎ Kam on 0532 493942, 5-8pm.

Amiga Athens club PD swaps, tips, cheats etc. Free membership, just new PD or tips in exchange for our services. Contact Stefanos Papamichael, 9 Derfeld Rd, Patisia, 11144 Athens, Greece ☎ 01/2027973.

AmigaBASIC club Free bi-monthly disk, help for beginners and experts. Membership £10/year. Contact: Conran Ahmad, 15 Weybridge Rd, Thornton Heath, Surrey CR7 7LN ☎ 081 689 9102.

Amiga Boatowners All things nautical, WHY exchange, nautical aid programs etc. Free membership, send SAE to D Beet for details. Lock, Branston Fen, Lincolnshire LN3 5UN.

Amiga Club Newsletter, disks, PD etc.£10 membership. Send SAE for details to Imp, 190 Falloden Way, Hampstead Garden Suburb, London NW11 6SE ☎ 081 455 1626.

Amiga Graphics Club I want to set one up! But to do so, I need your help. If enough of you reply, your graphics can only benefit. For details you should write to Jonathan McBrien, 16 Drumbawn, Enniskillen, Fermangh BT74 6NF.

Amiga Helpline Software/hardware help service, free access to PD, DTP fonts and clip-art, plus general chit-chat. Send a stamp for full details. Contact Gordon Keenan, Amiga Helpline, 6 Skirsa Square, Glasgow G23. Membership £20 per year.

Amiga Mania Bi-monthly publication (28+ pages). Public domain, licenseware, bargains, classifieds, free advice, free gifts, free disks. Annual membership £12. Contact D Cryer, 88 Blackbull Rd, Folkestone, Kent CT19 5QX.

Amiga Maniacs Help Graphics, sound, WB, programming, help. Beginners welcome. Free membership (by post). Contact Johnny, 8 Tan-y-Grais, Caernarfon Rd, Bangor LL57 4SD.

Amiga Musicians Club Membership gets you a disk with 50 IFF samples a month for 12 months. Also sample service. Membership £30. Contact Gavin Wylie, Guthrie Street, Carnoustie, Angus.

Amiga Navigation Contact Dave Thomas 4a, Allister St, Neath, W Glamorgan. PD, advice, even small repairs and social evenings. Weds 7–9pm. Membership £10 per year.

Amiga Network International 2 monthly club disk, reviews, advice. For info contact Phil or Steve: 434 Denby Dale Rd East, Wakefield, W Yorks WF4 3AE.

Amiga Utd Disk based, reviews, competitions, help service, BBS, games and utils. Contact D Collingwood, 14 Linden Close, Hutton Rudley, Yarm, Cleveland TS15 0HX. £10 a year.

Amiga Users Group – Luton Help, advice, swapping PD, exchange and discounts on software and hardware, monthly newsletter. Membership £5 per year. Contact Dave ☎ 0582 502806.

Amiga Users Klub Meets every Friday from 6.30-9pm, to expand members' knowledge of Amiga and to help solve people's problems. Contact Jack Talling, Windsor House, 19 Castle St, Bodmin, Cornwall PL31 2DX.

Amiga Video Producers' Group Disk magazine five times a year; meets quarterly in Swindon. Object library for mainstream Amiga 3D programs (*Imagine, Sculpt, VideoScape*, etc). For info SAE to J Strutton, 8 Rochford Cl, Grange Park, Swindon, Wilts SN5 6AB ☎ 0793 870667 before 9pm. Membership fee £10 a year.

Amiga Witham Users Group 85 Highfields Rd, Witham, Essex CM8 1LW. Tips and Basic programs. K Anderson ☎ 0376 518271.

Amigaholics Club Disk magazine covers PD, programming, music, art, DTP, and more. Free membership. Contact Kevin Bryan, 49 Coutts House, Charlton, London SE7 7AS ☎ 071-580 2000 Ext 240.

AmigaSoc PD, tips, cheats, MIDI, programming, disk magazine, all welcome. Free membership. Contact Neil Cartwright, 17 St Winefrides Ave, Manor Park, London E12 6HQ ☎ 018 553 5434:

Amiga Users Group Part 2 Advice, technical support, BBS, PD library, tuition, etc. Contact Andy Wilkinson, 25 Glen Eldon Road, Lytham St Annes, Lancashire FY8 2AX ☎ 0253 724607. Free membership.

Ami-Info Interested in the serious side of the Amiga? Then send an SAE for details to Paul Caparn, Homeside, Higher Warberry Road, Torquay, Devon TQ1 1SF.

AMOS Programmer Club Free membership, swap AMOS programs and PD, disk magazine and help for new users. Contact Gareth Downes-Powell, 6 Brassey Avenue, Broadstairs, Kent CT10 2DS.

AMOS Programmers Exchange Free membership. Swapping software and ideas. Help available. J Lanng, 7 Majestic Rd, Hatch Warren, Basingstoke, Hants RG22 4XD.

AMOS Programmers Group John Mullen at 62 Lonssdale St, Workington, Cumbria CA14 2YD. Hints, tips, tutorials too. SAE for info. £10 membership for bi-monthly disk mag.

Angus Amiga CDTV club Contact J Robertson, 22a High St, Brechin, Angus DD9 6ER ☎ 0356 623072. Review software, discuss anything Amiga. Free membership.

APDEG (Amiga Public Domain Exchange Group) Laser printing service, free PD, advice service, util disks for members, PD swaps. Contact Richard Brown, APDEG, 18 High Street, Mundesley, Norfolk NR11 8AE ☎ 0263 720868. Membership fee £6 a year.

Artman News, views, reviews, free PD for your articles. Free membership. Send blank disk plus SAE for free disk mag and two free games to A Greenwood, 40 Northwell Gate, Otley, West Yorks LS21 2DN ☎ 0943 466476.

Asia Amiga Association Newsletter, PD, information, advice, ideas, exchanges. Membership HK$250 per annum. For more info contact Pete Alex, Room 11c, Fortune Court, 4–6 Tak Hing St, Kowloon, Hong Kong ☎ 7245196.

Astro PD Send SAE and blank disk for catalogue. Help and advice also available. Contact D Benson, 3 Skiddaw Court, Nunthorpe, Middlesbrough, Cleveland TS7 0RD.

Atlantic Wave BBS 100s of files for download. DTP, clip art, graphics, utilities. First 200 members get unlimited downloads for life. Free membership. Message areas ranging from sport to cookery. All Amiga BBS. Call 0462 481745 (300 – 2400 baud 8N1) 24 hours a day.

AUGFL vzw Bi-monthly newsletter, PD, distribution & support of Belgian programs, registration-site, tips. 750 Bfr/year membership. Contact Lieven Lema, Meesberg 13, 3220 Holsbeek, Belgium.

Avon Micro Computer Serious Club The first Sunday night of each month 1900-2200, members 50p guests £1. Centre For The Deaf, 16-18 King Square, Bristol BS2 8JL Fax: 0272 311642.

BASIC Programmers' Group 68 Queen Elizabeth Dr, Normanton, West Yorks WF6 1JF. Encourages the use of BASIC, exchanges ideas and assists beginners to the language. Free newsletter Mark Blackall ☎ 0924 892106.

Batty's PD Everything to do with PD – friendly help and advice. Contact Ian or Lynn Battison, 7 Denmark Road, Northampton NN1 5QR ☎ 0604 22456. Membership £3.99 for life.

Beaconsfield and District CC Contact Philip Lishman 27 Russell Court, Chesham, Bucks ☎ 0494 782298. Meetings at St Michaels Hall, St Michaels Green, Beaconsfield 7.45–9.45pm. Programming, gaming swapping PD, having fun. Membership £10 for 6 months.

Bible Bureau Online scripture output and informal bible study. Quarterly meetings, membership £5 quarterly. Contact AD, 24 Brodie House, 10 Harcourt Avenue, Wallington, Surrey SM6 8AR ☎ 081 669 7485.

Bloomfield Video and Computing Beginners, video techniques. Meetings at Bloomfield Community Centre, Narberth, 7.30pm alternate Tuesdays. Membership £5. Contact Mrs Beryl Hughes, Nashville, 50 Glynderi, Carmarthen, Dyfed SA31 2EX ☎ 0267 237522.

Bournemouth Amiga Club Problems, fun, social beginners welcome. Free. Contact P Chamberlain, 36 Homeoaks, 30 Wimborne Road, Bournemouth, Dorset BH2 6QA ☎ 0202 296714.

BR & CJ Computer Club Regular disk mag packed with tips, reviews of games and serious software, game cheats database, demos and utils, very large PD library. Contact B Robinson at 23 Fairway Rd, Shepshed, Loughborough, Leicestershire LE12 9DS ☎ 0392 72889 or 03922 841296. Membership fee £1.25.

Bristol Amiga Club wants new or novice members. Help service, PD, games and utilities available. Free membership. Contact Chris Wiles at 3 Parkstone Avenue, Horfield, Bristol BS7 0BX ☎ 0272 512052.

Cacophony (Unlimited) Aims to create quality PD with AMOS and others. Help given. Mark Wickson, 49 Perrott Close, North Leigh, Witney, Oxon OX8 6RU.

Camberley User Group Lectures, competitions, advice, meetings, free membership. For more info contact F Wellbelove ☎ 0252 871545.

Cambridge Sixty-Eight Group (CASE) SuperBasic, QDos, QL Emulator and QL software support on Amigas (serious users only). Meets 7.30pm, second Monday of each month, at Robinson Hall, Lolworth, Cambridge. Contact EPL Rowell, 347 St Neots Road, Hardwick, Cambridge CB3 7QL ☎ 0954 210692.

CDTV User Group Newsletter, reviews, advice, helpline, CD swaps. Membership fee £4.99. Contact Gary Ogden, 50 Averill Road, Highfields, Stafford ST17 9XX ☎ 0785 227059.

CDTV Users Club Technical support, news, compiling compatible software list. Free membership – just send SAE. Contact Julian Lavanini, 113 Fouracres Rd, Newall Green, Manchester M23 8ES.

Champion PD Club PD at 30p, newsletters, advice, help and more. Membership £10. Contact Steve Pickett, 31 Somerset Close, Catterick, N Yorkshire DL9 3HE.

Cheapo PD Club Non-profit making postal PD, newsletters, advice. Membership £5. Contact Jason Meachen, Ivy Cottage, Chapel Road, Beaumont, Clacton, Essex CO16 0AR.

Chester-le-Street 16-Bit Computer Club Exchange advice and swap tips. Meets Mondays from 7.30–9.30pm, Ground floor function suite, The Civic Centre, Newcastle Rd, Chester-le-Street. Contact Peter Mears ☎ 091 385 2939.

Chic Computer Club Full details with an SAE to STAMP, Chic Computer Club, PO Box 121, Gerrards Cross, Bucks. For info contact Steve Winter ☎ 0753 884473.

CHUD Free membership. Send SAE for details to Mr M Sellars, 103 Newward Rd, Bulford, Salisbury, Wilts SP4 9AH ☎ 0980 33154.

Club 68000 Competitions, programming, music. Meets Harrogate Leisure Centre, Mondays

GET YOURSELF LISTED

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to *Amiga Shopper* User Groups List, 30 Monmouth Street, Bath BA1 2BW. We reserve the right to refuse entries.

AS27

Group name ....

Type of activities ....

....

Place of meetings ....

Time of meetings ....

Contact name ....

Contact telephone number ....

Contact address ....

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Membership fee ....

6.15pm–10pm. SAE to Chris Hughes, 59 Walton Park, Pannal, Harrogate, N Yorks HG3 1EJ ☎ 0423 891910.

Club Amiga £10 a year for PD and a 24-hr helpline (091 385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne and Wear.

Club Futura Advice to programmers and beginners. Send SAE for info to G Holland, 16 Hermiston, Monkseaton, Whitley Bay, Tyne & Wear NE25 9AN.

Comp-U-Pal Australian group for users in the outback. Newsletter, helpline, PD library. Membership A$24. Comp-U-Pal, 116 Macarthur Street, Sale, Victoria 3850, Australia.

Computeque From beginner to advanced user. Meets 7.45pm–10.30 pm every Tuesday at Inskip Meeting Hall, Ashurst, Skelmersdale, Lancs. Contact Steve Lalley ☎ 0695 31378. Half year membership £2.50 children, £3 adults

Computer Club A 16-bit club dedicated to being computer enthusiasts. Membership costs £15 per year. Contact 16 Laton Rd, Hastings, East Sussex ☎ 0424 421480.

Coventry and Warks Commodore Computer Club Self-help, PD library, guest speakers, newsletter. Meets Christ the King Community Centre, West Hill Road, Coventry. Contact Will Light, 22 Ivybridge Road, Coventry, West Mid ☎ 0203 413511.

Danish AMOS user group Bimonthly disk mag, £2 each, PD library. SAE for info. Contact Tom Poulsen, Stenmøllen 28, 2640 Hedehúsene, DK Denmark ☎ 42 16 54 84.

Darlington Commodore Users Club News, discounts, cheap PD, advice, newsletter and more. Annual membership £5. Contact S Wheatley, 1 Ruby St, Darlington, County Durham DL3 0EN.

Deluxe Cheats Disk User Group Software advice. Updates every 2 months! £4 for disk, £2 for updates. Contact Steven Frew, 96 Campden Green, Solihull, West Midlands B92 8HG.

East Midlands Amiga User Group Self-help group for beginners and experienced users. Meets Willoughby Social Club, 7–10pm every Wednesday evening. Contact Richard Haythorn, 70 Felstead Road, Aspley Estate, Nottingham ☎ 0602 298075. Membership £5 a year.

Edinburgh Amiga Group Membership £5, includes free advice and PD. Contact Neil McRea, 37 Kingsknowe Road North, Edinburgh EH14 2DE with SAE.

Enfield Amiga club Meet, swap, competitions, help for new users. For info contact Sean Clifton 32a Hoe Lane, Enfield, Middx ☎ 081 8042867

Exeter 16-bit User Group Programming. Andrew Deeley or Phil Treby at 25A Gloucestershire Rd, Exwick, Exeter, EX4 2EF. Meeting every Wednesday 7pm. Membership £6 per annum.

FST Amiga Club Bi-monthly newsletter, all types of activities. For £15 membership you receive one free commercial game plus one PD disk plus 11 further PD disks, one per month. Contact Tel or John, 17 Grasmere Close, Penistone, Sheffield, Yorks S30 6HP.

Fylde Computer Club All aspects of computing. Meets 7pm, Lostock Gardens Community Centre, 2nd and 4th Wednesday of month. £15 per year, 50p on door. Contact Colin Bliss, 90 The Esplanade, Fleetwood, Lancs FY7 7BQ ☎ 0253 772502.

Game Swap Club Swap original software and hardware. Membership £3. Contact Ade Ajidahun, St Andrews House, 125 North Road, St Andrews, Bristol BS6 5AH ☎ 0272 240399

Gamer-Link International pen-pal club for gamers. Free swap service, advice on tips and cheats. Life membership £5. Contact Stu, 28 Churchfield, Ware, Herts SG12 0EP.

GFA Basic Forum Free advice on programming in GFA. Also tutorial disk for sale. Beginners and advanced users welcome. Contact J Findlay ☎ 0788 891197 or send SAE to 52 Church Rd, Braunston, Nr Daventry Northants NN11 7HQ. Free membership.

Gibraltar Amiga Users Club PD library, monthly newsletter, disk magazine, competitions, regular meetings (in the John Macintosh Hall). Membership from £6 per year. Contact David Winder, 7 Lime Tree Lodge, Montagu Gardens, Gibraltar ☎ 010 350 79918.

Hanover Computer Club DTP, PD, games, help, monthly meetings, beginners welcome. Free membership. Contact Colin Jones, Hanover Community Centre, 33 Southover Street, Brighton, Sussex ☎ 0273 602834.

Harley's PD Swaparama Public domain swapping by mail. Contact G Varney, 140 Weston Drive, Otely, West Yorks LS21 2DJ ☎ 0943 466896.

Hereford Amiga Group Help, exchange of PD and shareware. Membership free. Contact John Macdonald, Alma Cottage, Allensmore, Hereford HR2 9AT ☎ 0981 21414.

Hermit Computer Club Hardware help and information, program swapping. Meetings 7-10pm, Mondays. Membership £3 per term, 50p per night. Contact John Maynard, Hermit Centre, Shenfield Road, Brentwood, Essex CM15 8AG ☎ 0277 218897.

Highland PD Free PD list contains lots of education, business and games disks. Free advice to beginners. Contact David Paulin, 255 Drumrossie Avenue, Inverness IU2 3SX ☎ 0463 242431.

Highlander BBS Lots of files, two CD-ROMs about to go on-line. Free membership. Contact Alan Walker, Mark Price ☎ 0452 384702 & 0452 384557, 300–14,400 speeds, 24 hours.

HTS (Malta) Free membership. Contact K Cassar, Block 1 Flat, 6 H E Hal-Tmiem, Zejtun ZTN07 Malta ☎ 674023.

Hyndburn Amiga Users Club Tuition, advice, PD, and more. Meets Mondays 7pm, at the Canine Club, Accrington (£1 on the door). Contact Nigel Rigby, 7 Brecon Avenue, Oswaldtwistle, Lancashire BB5 4QS ☎ 0254 395289.

Impulse BBS Comms, files, games and chat. Contact James Norris ☎ 081 698 8978, online 10pm till 6pm the next day. 14.4 HST.

Independent Commodore Products Users Group Free PD software, 100 page journal, technical helplines and discounts. Contact the Membership Secretary, PO Box 1309, London N3 2UT ☎ 081 346 0050 after 6pm, or your local branch:
Chelmsford ☎ David Elliott 0245 460189
Coventry ☎ Will Light 0203 413511
Dublin ☎ Geoffrey Reeves 010 353 1 288 3863
Exeter ☎ John Buckle 0392 214760
Macclesfield ☎ Peter Richardson 0298 23644
Mid Thames ☎ Mike Hatt 0753 645728 (8–10pm)
Solent ☎ Anthony Dimmer 0705 254969
South East ☎ John Bickerstaff 081-651 5436
South Wales ☎ Ian Kelly 0222 513815
South West ☎ Peter Miles 0297 60339
Stevenage ☎ Brian Grainger 0438 727925
Stoke-on-Trent ☎ David Rose 0782 815589 (eve)
Watford ☎ Bob Rigby 0923 264510
West Riding ☎ Kevin Morton 0532 537318
Wigan ☎ Brian Caswell 0942 213402

In Touch Amiga Penpals, contacts, PD, swaps £2.50 per year. For more information contact P Allen, 0342 835530, PO Box 21, Lingfield, Surrey RH7 6YJ.

Kent Youth Computer Group Computer fair visits, video and DTP work, monthly newsletter. Membership 40p per month. Meetings at the North Youth Centre, Thursdays 7–10pm. Contact Jim Fanning North Youth Centre, Essella Rd, Ashford, Kent ☎ 0233 629804.

Lothian Amiga Users Group Advice and help in buying hardware, software etc, group buying, dealers' circulars welcome. Membership free. Contact Andrew Mackie, 52 Birniehill Ave, Bathgate, W Lothian EH48 2RR ☎ 0506 630509.

Magic Windows Hardware projects, programming, PD, help and advice on all topics, beginners welcome. For more info send SAE to Frame, 26 St Benets Road, Stalham, Norwich, Norfolk NR12 9DN.

Maritime Amiga Club Maritime computing, interact with seafarers ashore on Amigas. Contact CDR K Osei, GN Ships Refit Office, 51 Rue de la Bretonniere, 50105 Cherbourg, France. ☎ 33 33225447.

Marksman (Trojan Phazer user group) Promotes use of the Trojan Phazer, swaps PD and own programs, disk magazine. Contact David Green, 67 Thicket Drive, Maltby, Rotherham, S Yorkshire S66 7LB.

MED Users Group Club for all users of OctaMED. Bi-monthly disk magazine, advice, news, competitions. Contact Richard Bannister, 6 Glevum Road, Swindon, Wilts SN3 4AF. Membership free, send SAE for details.

Melton Amiga Users PD, serious, advice. No pirates. Beginners and experts welcome. Contact Stephen Mowbray, 68 Ferneley Crescent, Melton Mowbray, Leics LE13 1RZ ☎ 0664 63421 (evenings only).

Navan Computer Club Software reviewing, graphics, business, news and chat. Meet various hotels in Navan, 7.30–9pm. Contact Mark Arnold, Cannistown, Navan, Co Meath, Eire ☎ 046 21078. Membership £6 per year.

N Ireland Amiga User Free PD, disk-based mag £2.50 per issue. SAE to Stephen Hamer, 98 Crebilly Rd, Ballymena, Co Antrim BT42 4DS.

New Hall Amiga Users Club Games, graphics, music, Workbench programming. Meets 7pm every Tuesday, New Hall Social Club, 104 Bury Rd, Dawtenstall. Membership £5 per year, under 16s not allowed. Contact Bill Grundy, 115 Stanley St, Accrington, Lancashire ☎ 0254 385365.

Northside Amiga Group Lectures by professionals on different Amigas and associated hardware. Member demonstrations on serious software and games. Meets 8pm alternate Mondays, Donamede House, Dublin 13. Contact William Kelling, 10/A Rainsford Avenue, Dublin 8, Ireland ☎ 01 532 807.

Nothing But AMOS Help with AMOS, tutorials, monthly disk mag – £7 for 6 issues. Contact Neil Wright, 3A Riding Dene, Mickley Square, Stocksfield, Northumberland NE43 7DL.

Pascal Programmers Group Disk-based newsletter for HighSpeed Pascal users. Free membership. Contact Colin Yarnall, 93 Manchester Rd, Wilmslow, Cheshire SK9 2JQ.

Pennine Amiga Club Free membership, free advice and a newsletter. Contact Neville Armstrong, 26 Spencer Street, Keighley, West Yorkshire BD21 2BU ☎ 0535 609263.

Perth and District Amateur Computer Society General advice, talks, Amiga PD. Meetings third Tuesday in every month, 8pm. Membership £6 or free for under 16s. Contact Alastair MacPherson 137 Glasgow Rd, Perth.

Phoenix Demo Coders, musicians, artists and designers making the best demos. Free membership. Contact Frank, 46 Hall Road, Chadwell Heath, Romford, Essex, RM6 4LJ ☎ 081 597 4661.

Ray Tracers Postal club to swap ideas, objects, pictures etc for all formats. Also disk mag and help. Membership 50p. Contact Neil Hallam, 12 Meesons Mead, Rochford, Essex SS4 1RN.

Redburn Computer Users Group Help, ideas, PC, graphics and business. Meets every second Wednesday 6.30pm to 9.30pm. Contact Ruby Anderson ☎ 0294 313624.

Red Vox For musicians and artists to swap samples, modules, artwork etc. Beginners and advanced. Free membership. Send SAE to Ian Ridley, 66 Birtley Villas, Birtley, Chester-le-Street, Co Durham DH3 1HP ☎ 091 410 2228 after 6pm.

Robotronix Amiga Club Bi-monthly newsletter, tips, cheats, programming support, advice. Send SAE for details. Contact P Symonds, 36 Century Road, Cobholm, Gt Yarmouth, Norfolk NR31 0BX ☎ 0493 667161, Membership £15 a year.

Royal Air Force Amiga Club Loads of new PD. Meets 1900-2000 hours, Thursdays, Blk 35, Room 40. Send 10 of your PD disks plus 2 x 24p stamps to Stan Young, HMF RAF Laarbruch, BFPO 43 ☎ 445.

Rye Amiga Group Regular newsletter, swap/meet at the Rye Community Centre. Contact Oliver Campion, 71 The Mint, Rye, E Sussex TN31 7EW ☎ 0797 222876.

Shropshire Amiga Link Advice, monthly disk mag, PD. Free membership. Contact N Cockayne, 2 Dodmoor Grange, Randlay, Telford, Shropshire TF3 2AW ☎ 0952 591376.

Sid The Kid Amiga Information on the Amiga 500, Plus, 1200. Free membership. Contact Sid Reeves, 75 Blossomfield Road, Solihull B91 1SA ☎ 021 705 8619.

Sittingbourne Co-op Computer Club Programming, PD, games, free write-in advice service. £10/year, £5 unwaged. Meetings Mondays 6–9pm at Mall beneath Regis Suite. Contact Andy, Unit 11, The Mall, 121–127 East Street, Sittingbourne, Kent ME10 4AQ ☎ 0795 842608.

Slim Agnus PD library, BBS, advice from Amiga experts. Group meets the last Thursday of every month. Contact Philip Worrel, 115 Brocks Drive, North Cheam, Sutton, Surrey SM3 9UW.

Software City Swapping, competitions, club magazine. Membership £8. Contact N Richards, 9 Hollis Close, Manor Estate Farm, Rawmarsh, Rotherham, South Yorkshire S62 7LX ☎ 0709 526092.

Software Exchange Club Free help and advice. Contact Michael Lacey, Fern's Post Office, Enniscorthy, County Wexford, Republic of Ireland.

Software Exchange Service 13 Bournville Lane, Stirchley, Birmingham, West Midlands B30 2JY. For more info ☎ Michael Pun 021 459 7576.

South 16 Amiga/ST User Group. Bi-monthly disk based mag, discounts available from local stores, free advice and extensive PD library. £12/year. For more info send SAE to PO Box 16, Southampton, SO9 7AU.

Southend Team Music, PD. Free membership. Contact Scotty, 52 Prince Avenue, Southend-on-Sea, Essex SS2 6NN ☎ 0702 333974.

Southport Amiga Users Advice, friendly evenings Mondays at 8pm. No charge, discounts from local store. For info contact Michael Mitcham, 5 Easdale Drive, Ainsdale, Southport, Merseyside ☎ 0704 79936.

South Wales Club Newsletter, PD library, free newsletter, programs, help and advice. For more info contact D Allen 53 West Avenue, Trecenydd, Caerphilly CF8 2SF.

Steel PD, cheats, ideas, music, art, programming, hardware mods. Free membership (postal only). Contact James Whitehead, 33 Middle Cliffe, Drive Crowedge, Sheffield S30 5HB.

Tay-Soft PD Club Non-profit-making postal PD, advice, disk newsletter, helpline 6–10.30pm. Contact Dave Thornton, 46 Balmerino Road, Dundee DD4 8RR ☎ 0382 505437. Membership £2.50 (free Utils disk on joining).

The Amiga Club Monthly newsletter, competitions, software exchange, huge PD library, cheats, tips, reviews. Contact G Starling, 31 Pine Lea, Brandon, Durham DH7 8SR. Membership £10 life plus two free games and *DCopy*.

The Amiga Studio Friendly, helpful advice for serious users of the Amiga. Monthly newsletter, PD library, free loan of equipment to members, bar. Meets 7pm Tuesdays, Mitchells Club, Scotia Road, Tunstall. Contact Dave Rose ☎ 0782 815589.

Twilight Advice on hardware and software, Fred Fish PD. Free membership, disks 50p each. Contact 13 Mavis Court, Ravens Close, London NW9 5BH.

UK Subs The Hanger BBS, trading post for PD files, swapping. Free membership. Contact Diddy or Arklight ☎ 0525 875518.

Unique Styles Postal club for Amiga artists, programmers, musicians. Free membership. Contact Derek at 15 Montgomery Rd, Highbrooms, Tunbridge Wells, Kent ☎ 0892 518319.

Video Visuals Exclusively for video producers, PD library, genlocking, digitising, quarterly disk magazine. Membership £10 per year. Contact Chris Brown, 4 Lavender Close, Witham, Essex CM8 2YG.

Wardray Hern Consortium User group for Amiga and possibly others. Membership fees to be discussed and incurred. PD library to be set up. Also Hern connection – worldwide contacts wanted. SAE and disk to WardCon info, (AS) Warren Hardy, 21 Stockfield Ave, Fenham, Newcastle upon Tyne NE5 2DX.

Warpdrive Help-line, PD library, bi-monthly disk mag, free drinks, competitions and infosheet. £15 per year. Contact B Scales 110 Burton Ave, Balby, Doncaster DN4 8BB ☎ 0302 859715.

WCSPSA! Help available. PD disk of your choice and newsletter every month. PD at £1. Membership £25. For further info contact A Jamieson ☎ 0749 677609.

Worldwide PD Club Over 2,680 disks – send blank disk and SAE for catalogue. Membership DM60 a year or DM6 a month. Contact Dave White, Berliner Str 39, 4030 Ratingen 1, Germany ☎ 02102 499729 (Germany).

Wrexham District Computer Club PD, library, equipment loan. 10p to join, 50p to get in. Meetings at the Memorial Hall, Wrexham every Thursday, 7–10pm. Contact Paul Evans, 3 Ffordd Elfed, Rhosnesi, Wrexham, Clwyd LL12 7LU.

Zymurgy General Amiga computing. Free membership. For further info contact A Carr, 39 Sewlkirk Rd, Ipswich, Suffolk IP4 3JB ☎ 0473 725241.

Note: this list is provided as a free service for amateur, non-profit-making user groups. *Amiga Shopper* does not endorse or recommend any particular group and cannot be held responsible for any losses or problems you might suffer.

SOFTWARE for free

Once again, Ian Wrigley tests out a mixed bag of low-cost and no-cost software for all tastes...

More Fish disks this month – as usual, many thanks to Anglia PD for supplying them. It's actually a bumper crop this month – Fred's output seems to be increasing with time, after a rather sparse winter. So, without further ado (as they say), here we go...

PAGER
Fish disk 824

Pager is a CLI-based utility which – quite simply – adds page and line numbers to any ASCII text file. Not the most exciting task, true, but programmers and the like may find it useful. It requires OS 2.04 or higher – as do more and more programs these days – and is freeware. The documentation isn't incredibly clear – the author is German, and his translation isn't perfect, with the result that some of the options need to be guessed at. However, he includes a couple of example commands, and from them you can relatively easily work out the syntax.

Pager won't set the world on fire but it does the job quickly and without hassle – and for that, in an environment where more and more people seem to be releasing half-tested programs, the author deserves congratulation.

Program rating 7/10

All 1.35
Fish disk 825

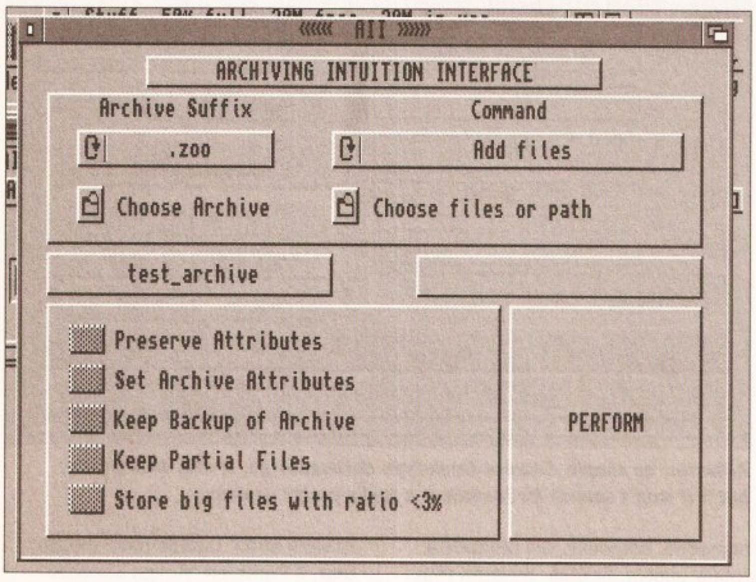
I looked at *All* a couple of months ago, but this version is quite a significant improvement. For starters, it will now run under OS 1.3 as well as 2.04, thanks to the use of Nico François' **ReqTools** library.
In case you missed the review (where were you?), *All* stands for *Archiving Intuition Interface,* and it's a friendly, Intuition-based front-end to archiving programs such as *LhA.* These are very powerful tools, but tend to put many people off because of their complexity. Now, you can easily create archives simply by selecting filenames from a requester – no more remembering arcane command structures.

All version 1.35 supports not only archive creation with *LhA,* as previous versions did, but now also *LZH, Arc* and *Zoo.* It will de-archive files created in *LhA, LZH, Arc, Zoo, Zip* and even *Arj,* if you need it to do that – there is no Amiga program written yet that creates *Arj* files, but you may receive files created on other machines that have been compressed in this format.

Installation of the program is simple – just drag it to wherever you want on your hard drive or boot disk. From the Project menu, choose "Select Archiver" and you'll be asked to find the various archiving programs that *All* supports. (They aren't distributed with the package – you'll have to get them separately.) If you don't have a particular one, just hit Cancel in the requester and the program will move on to the next.

After you've done that, you can get to work. Click on Choose Archive to create or select an archive. Then click on Choose Files or Path to select any files which you want to add. Pick what you want to do – add files, list the contents of the archive, extract files or whatever – and hit Perform. It's as simple as that. There's even an on-line help facility for if you get stuck.

There are check-boxes to let you invoke various archiver options such as preserving file attributes and so



All – the Archiving Intuition Interface – now provides a friendly, attractive front-end for a wide range of archivers, so you never need use the CLI again.

RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a 'value for money' rating, since you're essentially paying for one thing, or group of things, on the disk.

Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a 'program rating', which reflects how good I think they are, taking into account usability, bug-proofness, my own particular (or should that be peculiar?) tastes and so on. Both ratings are out of a maximum possible 10.

BEGINNERS START HERE

What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software is only one branch of this area; the other main one is shareware.

Essentially, PD software may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual. Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her work.

The third branch of software that we cover here is called licenseware. This is a form of shareware which is licensed to one (or more) PD libraries. In essence, when you buy a licenseware program you are buying shareware and paying the license fee at the same time. For this reason, you should treat any licenseware that you buy exactly as you would treat a piece of full-price commercial software – don't pass it around to your friends. You've only bought the right to use it yourself.

Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, not altering the program, or making sure that all the original documentation is included on the disk.

You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.

on. Although you can't access absolutely all the features of, say, *LhA*, you can certainly do 99% of the things that you'd ever want to do from within *All*.

This is an Aus$5 shareware program which deserves to become extremely popular – especially now that it supports just about every Amiga archiving program, and certainly all the main ones. Highly recommended.

Program rating 10/10

DATE2DAY

Fish disk 826

Why oh why oh why, dear Points of View, why do people release basic programming exercises as freeware? *Date2Day*, by Gérard Cornu, is a program which will, given a date, month and year, tell you the day. And... er, that's it. You enter the relevant details by moving a slider and clicking on a couple of buttons, and the full day and date are shown at the bottom of the window.

I'm fairly sure I remember doing something similar to this for my O-Level Computer Studies course some three centuries ago. Okay, my program didn't have a cute Intuition-based interface, but then, the Amiga wasn't invented when I wrote the program. This is the sort of thing that you write just to see if you've got the hang of programming for Intuition – you certainly don't send it out to the world with a documentation file more than half full of messages telling prospective users that they may not sell or distribute it for a profit, and that no magazine cover disk can carry the program. Sorry, Gérard, but I don't think that *Amiga Shopper* were considering it in the first place...

Program rating 2/10

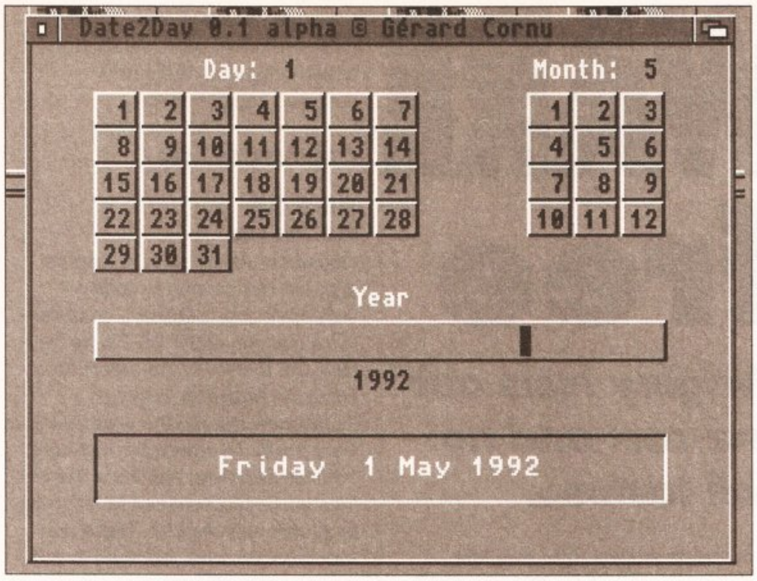
MEMSNAP

Fish disk 826

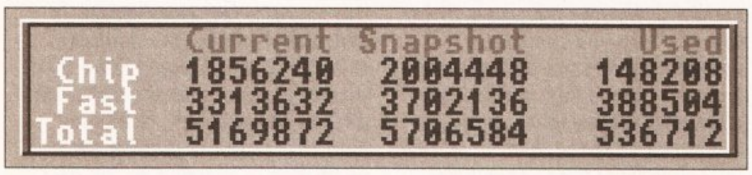
MemSnap is probably of most use to programmers, or those trying to find out why their Amiga seems to run out of memory after a while. It simply puts a small window on the screen which displays the amount of free memory available. Clicking in the window takes a "snapshot" of the amount available, and this figure continues to be displayed, along with the difference between the current free memory and the snapshot figure – so if you take a snapshot, launch a program, quit it and then look at the difference between current and snapshot, you can see whether the program has freed up its memory properly, or whether it has "hidden" some from the operating system – which can only be reclaimed by re-booting the Amiga.

MemSnap is small, it's free and it does its job. If you need such a program, this one will do just fine.

Program rating 8/10



Date2Day: probably the most useful piece of freeware ever written for the Amiga. The program you should have bought your Amiga to run. Or not.



MemSnap: see if your programs are freeing up their memory properly – just compare the current figure with the "snapshot" of the free memory you had.

AMASTER

Fish disk 827

Old Hans-Peter Guenther must have just discovered the Fish system of software distribution – this is the third of his programs that we've looked at so far, in the space of just seven disks!

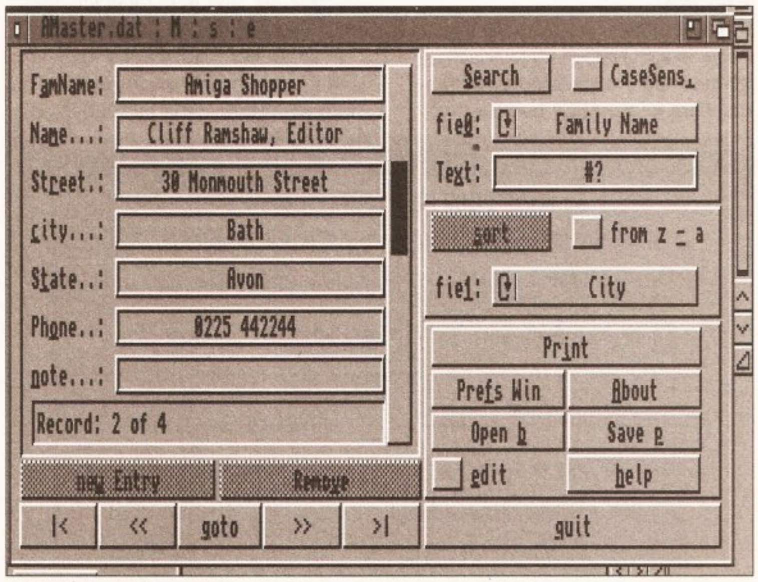
AMaster is (groan) a simple database. Really, quite why people keep on writing these things I don't know – perhaps on the principle that if everyone keeps trying long enough, someone, someday, will produce a totally usable, flexible, program that people might actually trust their precious data to.

Even though address book programs aren't my favourite software, my first impressions of *AMaster* were quite favourable. On the down side, there are only seven fields, each of which has a pre-defined name. And they can only display around 25 characters each – you can enter more, but to view them you must select the field and scroll along the text.

All the usual "go to record", search and sort options seem to be present, and (quite usefully) you can decide which fields you want to appear on any printout – so if you just want to print people's names and phone numbers, that's no problem.

It was only when I started to use the program that I started finding problems. First of all, you have to tell the program explicitly that you want to edit records. Without clicking on the "Edit" check-box, you can't create, delete or edit records. This, in its own way, is useful – no hitting the "Remove" gadget by mistake. Unfortunately, though, although your changes don't take effect, you can type over information in an existing record to your heart's content. I happily scrolled through a list of a dozen names, adding extra details, only to discover that all my typing had been ignored, because I hadn't checked the Edit gadget. Not very user-friendly – I would have preferred it if the program hadn't allowed me to change the text; at least then I would have been alerted immediately.

That, though, is more a user interface issue than anything. What is more fundamental is the fact that I couldn't persuade the search feature to work at all. I would have thought that, if I entered "Amiga Shopper" and hit Search, the program would immediately produce my entry for this esteemed journal. But no – apparently all (or none) of the entries in my database were found. With that, I gave up; there are other programs about that, if not as pretty-looking, at least do the job properly.



AMaster: as simple Address-Book-type databases go, it may look pretty, but if it won't search for records it's really pretty useless...

Program rating 4/10

GRABKICK

Fish disk 831

Hmm. An interesting one, this, and no mistake. *GrabKick* copies the

continued on page 107

GET IN CONTACT!

If you've written – or discovered – any PD, shareware or licenseware that you think should be reviewed, or if you've got any comments or suggestions, write to me c/o *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Alternatively, you can contact me on cix as 'iwrigley', or on the internet as 'ian@vampire.demon.co.uk'.

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D20/21...Red Sector (2)
D24/25..New Tek Reel 3 (2)
D26...Total Remix 2 Demo
D27...T.V Theme
D30...Epic Demo
D34...P.D Collection
D36...Virtual Worlds
D37..Vectra Sinking Demo
D38...TFF Demo Voyage
D40...Safy Demo
D59...Video Effects 3D
D64..Cult Vector Dance 2
D68..Phenomena Demo
D70...Amos 3D Demo
D74...A Trip to Mars
D76..A2000 Genlock Demo
D81/82..Budbrain 1 (2)
D83...Budbrain 2
D85..Crionics Neverwhere
D87...Piranha Demo
D101..Alcatraz M/Demo 3
D102..A Chaplin Demo
D103..Total Destruction
D105..Mr B Demo Comp 4
D106..Walter S.T Demos
D111...Defcon 1
D117...Aurora M/Demo
D118...Cult M/Demo 2
D125...Precise Demo
D133...Fascination
D136..Goldfire Megademo
D137/138..So What (2)
D139..Devils "No Reality"
D144..The Silents "Ice"
D145..Crystal Symphonies
D148..Ray Of Hope 2
D149..No Brain No Pain
D158/159..Cyborg Demo (2)
D195..Coaxial Comp
D197...MC Disk 1 Coma
D199..End Of Century 1999
D206...Dreamers 3
D208..Avengers M/Demo
D216/217..Bass o Matic (2)
D218...Disorder Demo
D219...Tuff Enuff
D225..Cool Fridge Demo
D226..Hardcrack M/Demo
D233..Hypnautic Hammer
D235..Six of One Demo
D238..Planetside
D239..Lemmings Revenge
D240...Total Respray
D243...Budbrain 3
D244..Phenomena Inerspace
D245...Total Retrial
D247..Pulling the Trigger
D253..CES Demos
D256...Total Recount
D257...Total Rebate
D262...Spasmolytic
D264...D-Mob M/Demo
D267..Sun Connection 2
D270..Kefrons The Wall
D271...Timex Hydra
D272...Electric Demos 1
D274...Defpackers Demo
D276...Cave La Weird
D279...Iraqui Demo
D280/281..Delerious (2)
D290...Popeye Demo
D292...Excalibur Demo
D298..Silents + Anarchy
D301...Subway Demo
D302...Tarot Demo
D303...Despair Demo
D307...L.S.D Demo
D312...Devils Colours
D314...Trakmo
D315..The Groove Ramjam
D322/323..Star Wars (2)
D325/326..Real Empathy (2)
D328/329..Red Dwarf (2)
D330...Darkness M/Demo
D332...Melted Experience
D333-337...Odyssey (5)
D338...Beastie Boys Demo
D340...Watchman Demo
D341..Anarchy Smoker Co
D342..Ed 209 The Revenge
D343/344..Hardwired (2)
D346..Wildfire M/Demo
D347..Mindwarp M/Demo
D348/349..Skizzo Demo(2)
D350-352..Treacle Team(3)
D358...Mr Men Stories
D359..Seeing is Believing
D360...State of the Art
D361..Mayday Resistance
D362/363..Jesus on E's(2)
D364...Fish Tank
D365...Optimum Pressure
D366...Mind Riot
D367..In the Can Demo
D368..Dynamic Illusions
D369...Piece of Mind
D370...3D Demo 2
D371..Lethal Exit

UTILITIES

U1..Games Music Creator
U21..The Comms Disk
U32.. Modem Utils
U34.. Red Devils Utils 1
U36.. Soundtracker Special
U38.. Paint, Music, Media
U39...Card Designer
U40...Spectrum Emulator
U41...Red Devils Utils 4
U43.. Future Composer
U44.. Kefrons Makeboot
U45..P.E Giant Utils 168
U47..Label Designer
U49...Ultimate Icon Disk
U50...Power Comp Utils
U51..Jazz Bench
U55...Visicalc
U57...Quickbench
U59...Font Designer
U60...D-Paint Fonts 1
U61...D-Paint Fonts 2
U62...Med 3.20
U63...Direct Anim Creator
U64...Crossword Designer
U66...CLI Help + Others
U67...S/Tracker Mega
U68...Ultimate Boots 1
U69...Ultimate Boots 2
U73...Powerlogo
U74...M-Cad
U75...Journal Home Acc's
U76...Home Utilities
U77...Electrocad
U78...Ami Base
U81...Bootbench V2.0
U82...Slideshow Maker
U83...Catalog Workshop 1
U84...Catalog Workshop 2
U87...Hard Disk Utils
U89-94...Amateur Radio (6)
U95...C-Light + Others
U96...GFX Utils 1
U100...Ham Lab
U101...Sid V2.0
U108...A-Gene
U113...Midi Utilities
U118/119..Video Utils (2)
U132...GFX Utils 2
U133/134...North C (2)
U136...CrossDoss (demo)
U138...Squid Squad Utils
U139...Terminalities V1.0
U140...Squash 1 (2.04 only)
U141...Squash 2 (2.04 only)
U142...Text Plus 3
U144...Dennis Samples 1
U145...Digital Intro Design
U146...Viz Clip Art
U147...Spectrum Emulator
U151...Slipstream V/Killers
U152...Red Devils Utils 6
U154...Amigafox W/P
U155...P.D Utils Docs Disk
U163...Quickbench + (2.04)
U164...Rim Database
U166...Dennis's Hack Disk
U167...Demolisher Utils
U168...Home Business 3
U172...Squelch (1.3 only)
U176...GFX Utils 3
U177...Star Charts
U179 -180...Dice (2)
U181...Celtic Demo Maker
U186 - 206...Track Ins 10-30
U207...Icon Collection 1
U208...Dave Jones Fonts 1
U210...Ultrapaint 3
U211...Chemesthetics
U212...Animated Pointers
U213...Desk Top Publisher
U214...Deskbench Icons
U215...Messy Sid 2
U216...Master V/Killer 2.2
U218...Data Base Wizard
U223...Ten Pin Database
U224...Q-Base Database
U226...Games Solutions 1
U231...D-Paint Fonts 3
U232...Games Cheats 2
U234...Flexi Base
U235...Ami Cash VI
U238...Iconmania
U240...Icon Editor
U252...Opticomms 2.0
U254...New Superkillers 2
U255...Protracker v2.0
U256...Atari ST Emulator
U258...D-Copy 3
U262...PC Emulator
U263...Med 3.21
U273...Vidi Fonts 1
U274...Illinoi Labels
U275...600 Business Letters
U279...Invoice Printer
U280...Woman V2.02D
U283...Headline Fonts
U289...Amos Updater
U290...Kickstart 2.04
U292...Black Tiger Utils 1
U293...Black Tiger Utils 2
U294...Text Engine V4.0
U295...Game Tamer
U296...Ultimate Disk Crea
U297...10 PD Copiers
U298...Protracker V3.0

GAMES

G1...Return to Earth
G2...Games Comp 5
G3...Dizzy Lizzy
G4...Scum Haters
G5...Parachute Joust
G6...Frantic Freddie
G8...Twintris
G9...Pseudo Cop
G10...Drip
G11...Bug Bash
G12...Asteroids
G13...Llamatron
G14...Escape From Jovi
G15...Moria Adventure
G16...Ground Attack
G17...Megaball
G18...Insiders Club
G19...Various Adventures
G20...Battleforce
G22...Dragon Cave
G24...Rings of Zon
G25...Mayhem
G26...Mechflight
G27...The Tennis Game
G28...Flaschbier
G29...Buck Rogers
G30...Greyslayer
G31...7-Tiles
G32...Mega Comp 1
G33-34...Star Trek 1 (2)
G35-37...Star Trek 2 (3)
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G46...Games Comp 3
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G49...Games Comp 4
G50...Games Comp 6
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G56...Miniblast
G57...Lamer Game
G58...Games Comp 7
G59...Games Comp 8
G60...Pom Pom Gunner
G61...Caverunner
G62...Crystal Caverns
G63...Intact
G64...Eternal Rome
G65...Lemmingoids
G66...Downhill Challenge
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G69...Puggles
G70...Chainsaw Death
G71...Pirate Pete's Treasure
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G73...Castles
G74...Dynamite Dick
G75...Card Games 1
G76...Wizzy's Quest
G77...Growth
G78...Skate
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G80...Napoleonic Sim
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G87...Matched Pairs
G88...Raphaels Revenge
G89...Snake Pit
G90...Zeus
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G97...Shootout
G99...Holy Grail Adventure
G100...Amos Coindrop
G101...Classic Comp 1
G102...Card Games 2
G103...Super Skoda Chall
G104...Grand Prix Sim
G105...Games Comp 9
G106...Computer Conflict 2
G107...Mission X Raid 2
G108...NU Game
G109...Antep + Slot Cars
G110...Tricky + The Turn
G111...Marble Slide
G112...Games Comp 10
G113...Black Jack Lab
G114...Dungeon of Madroj
G115...Amiga Columns
G116...Robocop In Iraq
G117...Mutant Camels
G118...Games Comp 11
G119...Number Fumbler
G120-122...Warlock (3)
G123...Card Sharp 1
G124...Bart Simpson
G125...CC Games Comp
G126...Air Ace 2
G127...Breakout Con Kit
G128...Pipeline
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G175...Othello
G178...Evil Dead Game
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G182...Diplomacy
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G186...Water Works
G187...Act Of War
G188...Mutants Games
G189-193...Timelords 1-5
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G195-196...Neighbours (2)
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G206...Cheats Disk 3
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G208...Airport
G209...F.R.A.C.
G210...The Golden Fleece
G211...Legend Of Lothian

SLIDES

S1...Ham Pics Show 1
S4...Madonna Slides
S5...Moviestar Slides
S6...Party Disaster
S8...Immaculate Collection
S9...Simpsons Slides
S10-11...Channel 42 (2)
S12...Bruce Lee Slides
S14...Addams Family
S15...Viz Mag Slides
S16...Boris 13
S17...Docklands Jarre
S18...Dr Who Demo
S19...Napalm Death
S20...Nasa Slides
S21...Exodus 3D Slides
S22-24...WWF Slides (3)
S26...Cascade Demo
S27...Demons Slides
S28...Total Recall
S29...Joe's Slides
S30...Ham Pics Show 2
S31...D-Paint Slides
S32...Neighbours Slides
S33...Roger Dean Slides
S34...Iron Maiden Slides
S35-36...Tobias Richter (2)
S37...Joe Trsi Slides
S38...Basket Case 2
S39...Eces Slides
S40...Fraxion Devine 2
S41...Fraxion Devine 1
S42...Golems Gate Slides
S43...Chainsaw Slippers
S44...Cry For Dawn
S45...Forgotten Realms (2)
S47...Kick Off 3 Slides
S48...PD Slideshow
S49-52...Terminator (4)
S53...Robocop 2 Slides
S54...Trackmaster Slides
S55...Forgotten Realms 2
S56...Garfield Slides
S57...Pawnbroker Slides
S58...Hellraiser Slides
S59...Night Breed Slides
S60...Raytracing
S61...Horror Slides
S63...Tate Gallery 2
S64...Rock Star Manager
S65...Images Slides
S70...Muscle Mania
S71...Creature Comforts
S72...The Wonder Years
S73...Watership Down
S75...Ferrari 348 Pics
S76...Belinda Carlisle
S77...Cher Slides
S79...Freddies Dead
S80...Wendy James Slides
S81...The Invisible World
S82-83...Terminator 2 (2)
S84...Fantasy Pics
S85...Gulf War Slides
S86...Magical Pics
S88...Gulf War Tribute
S89-90...S/Thing Fishy (2)
S91...Eldorado Slides

ANIMS

A1...Probe Sequence
A2...Ghost Pool
A3...Jogger + Magician 1
A4...Gymnast Demo
A5...Fractal Flight
A6...Basketball Demo
A9...Magician 2
A10...Pugs In Space
A11...Luxor Teenager
A13...Juggler Demo
A16...Cool Cougar
A17...Mono Cycle Anim
A18...Robocop Anim
A20...Mayhem on Wheels
A21...Jugette 2
A22...Shuttlecock Anim
A23...T-Pot Anim
A27...Fleet Manouvre
A28...Billiard Anim
A29...E/Prise Leaves Dock
A30...Star Wars 2 Anim
A31...Star Trek Anim
A32...Fraxion Revenge
A34...Madonna Anim
A35...Stealthy Anims 2
A36...Raiders Of The Lost Ark
A37...Bugs Bunny Show
A38...Iraq V's UK Anim
A39...Mike Tyson Anim
A40...Knight Anim
A42...Walker 2
A43...Walker 3
A45-46...Light Cycle (2)
A47...Exploding Head
A48...Police Car Chase
A49...Top Gun Demo
A50...Animators Demo
A51...5 Ways to Kill a Mole
A52...Another 5 Ways
A53...Batman The Movie
A54...3D Spaceship
A55... Mr Potato Head
A57...Camouflage
A58...VGA Anim 4
A59...Low Level Flight
A63...Amy V's Walker
A64...Real Pinball Anim
A65...Franklin The Fly
A66...Porky Pig Anim
A67...Adventures of Chuck
A69...Bunsen Burner
A70-71...Max Overdrive (2)
A73...Spaceshuttle Anim
A74...Ghostbusters + Horse
A76...Alarm Anim
A77...Flight Anim
A78...Piano Anim
A79...Dart Anim
A80...Bad Bird Anim
A81...Holiday Anim
A82...Fillet The Fish
A83...The Boings
A84... Clothes Peg
A85... Miners Anim
A86...Pocket Watch Anim
A90-93...The Movies 2 (4)
A95...My Tin Toy
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- *U4044 (WB 2/3 only) (I) Japanese tutor (helps you learn the language)*
- *U4045 (P) F.E.S Basic (a complete Basic programming package)*
- *U4046 (P) Arexx 60+ Help (Arexx help disk)*
- *U4047 (P) Bics (Make intros for your disks)*

GAMES
- *G6036 (P) (I) Total War (Perfect version of The Risk board game)*
- *G6038 (P) Cybernetix (The best PD game by far - like Defender!)*
- *G6042 (P) Super Pacman 92 (the best ever)*
- *G6050 (P) Yacht C (Classic five dice game - new version)*
- *G6051 (P) (I) Bridge (The full card game - special A1200 version included!!)*
- *G6052 (P) Wordsearch 2 (2 good versions wtih loads of puzzles)*
- *G6053 (I) (WB 2/3 only) GNU Chess (excellent graphics - the best chess game yet!)*
- *G6054 (I) (WB 2/3 only) Balders Grove (new commercial standard Boulderdash game - brilliant!)*
- *G6055 (P) (I) Roach Motel (wonderful platform game)*
- *G6056 (P) Cash Fruit (probably the best fruit machine ever!)*
- *G6057 (P) (I) Poker (the card game - loads of features!)*
- *G6058 (P) Oblivion (brilliant defender arcade game!)*
- *G6059 (P) Mega Cheats Disk (latest games cheats)*
- *G6060 (WB 3 only) Tetris. AGA (Tetris for A1200/4000 only!)*

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- *C714 Storyland II (Brilliant kids game)*
- *C719 (P) Total Concepts (2 Disks) (Astronomy & Dinosaur Education Pack - Good!)*
- *C720 (P) Colour the alphabet (Great education for early learners 4ys+)*
- *C724 (P) Doody. (Like Mario Bros and very good -NEW!)*
- *C725 (P) Mr+ Mrs. (Platform adventure for 7yrs+ - it's got everything!!*
- *C726 (P) GCSE Maths (Great revision disk)*
- *C727 (P) Top Secret (Reviewed as the best platform game ever!!)*
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- *C730 (P) Wizzys Quest (Wizard, Damsel + Monsters, great game!)*

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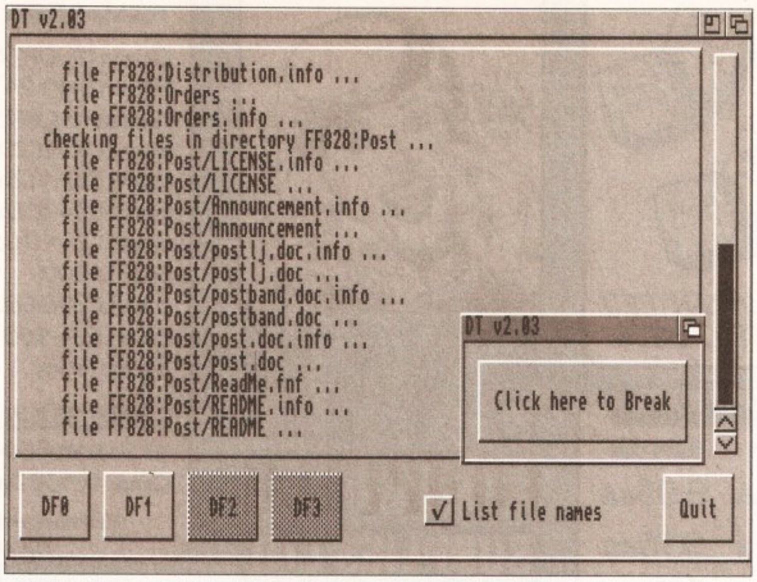
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continued from page 104

contents of any KickStart ROM into a file; the author, Ralf Gruner, says that you can then use a program called *SetCPU* to start an Amiga with an MMU (Memory Management Unit) using the KickStart ROM data in that file – for example, to test software under development with earlier versions of the Amiga's ROM.

Fred Fish has gone out of his way to point out that neither he nor, presumably, the author condones using the program for any illegal uses – although he says that "there are many legitimate reasons for wishing to make a file copy of a ROM image." Personally, the only legitimate use I can think of is if you've got 32-bit RAM: copy the contents of the ROM into 32-bit RAM and an accelerated processor can access it more quickly than ROM, thereby boosting the speed at which the operating system can run. If you're taking this issue's lead and going down the upgrade route, or if you already have 32-bit RAM, the program's here for you...

There's no program rating for this particular offering; it does its job just fine, as far as I can tell, but its legitimate uses seem rather limited to me and I'm still rather sceptical about the principle of giving people loaded guns on the assumption that they won't misuse them.



DiskTest: verify the integrity of your floppies before you take them on holiday with you... It tells you everything you never wanted to know, and then some.

DISKTEST

Fish disk 828

DiskTest checks the integrity of hard and floppy disk drives. In other words, it makes sure that what you think is on a disk is actually okay, with no errors which will cause the data to be unreadable just when you need it most. If you're putting files on to a floppy before taking them away from your home machine, you'd do well to run this program over the floppy before you go – that way, you can be at least fairly sure that you'll be able to extract the files at the other end.

> **"Probably the most fully-featured comms program for the Amiga."**

The program first reads all the tracks on the disk, to make sure that there are no basic media errors; it then reads all the files on the disk, record by record, to ensure that the files have been written correctly.

To check a floppy disk, you simply click on a button – DF0 to DF3 – and the disk in that drive is verified. Or, you can drag a folder or disk into the program's window, in which case only the second part of the verification process will take place (this is the only way to check a hard disk – the program won't verify the media, only the data). This can be awkward, however; the program's window takes up most of the depth, and all of the width, of the screen – so you have to move your disk icon to the top or bottom of the screen before you launch the program. I thought that I'd found a way around this problem: the program has a "shrink" button which reduces the window to a small title bar, and I assumed that I could drop a disk icon on to this bar. Foolish me: I tried with one of my hard disk partitions and was rewarded with one of the more spectacular crashes I'd seen – the colours on my monitor would have been great if I were into psychedelic trips through a paint factory, but do tend to be a bit worrying when you realise how long it's been since your last backup.

In fact, no harm had been done. I repeated the experiment with a floppy and found that that too caused a crash, but again didn't damage the data on the disk. Still, it looks like this is a serious bug that really does need fixing.

Even before that fix comes out, though, you should still seriously consider getting hold of *DiskTest;* using its floppy disk buttons works perfectly well, and it's always good to be able to verify your floppies before you send them winging their way around the world.

Program rating 8/10

POST

Fish disks 828, 829, 830

Post is a complex and important program – assuming it all works. I confess, it's *so* complex that it will take me many weeks to check out thoroughly. However, I thought I should at least draw your attention to its presence.

Post is a full PostScript interpreter which enables you to view PostScript images on-screen or output them to a file or any non-PostScript printer. So if you've been given a graphic in PostScript format, or (as is sometimes the case) you have a documentation file that's been saved as a PostScript document, but you don't have a PostScript printer, you can now view and output it. The program supports both Type 1 and Type 3 fonts, and has a full Intuition interface. It requires AmigaDOS 2.04 or later to run. The main program is on Fish disk 828, along with some PostScript fonts, and other fonts can be found on disks 829 and 830.

I'm in the process of giving *Post* a proper evaluation now, using PostScript files from a variety of sources; watch out for a definitive review next month!

TERM 3.1

Fish disks 831, 832, 833

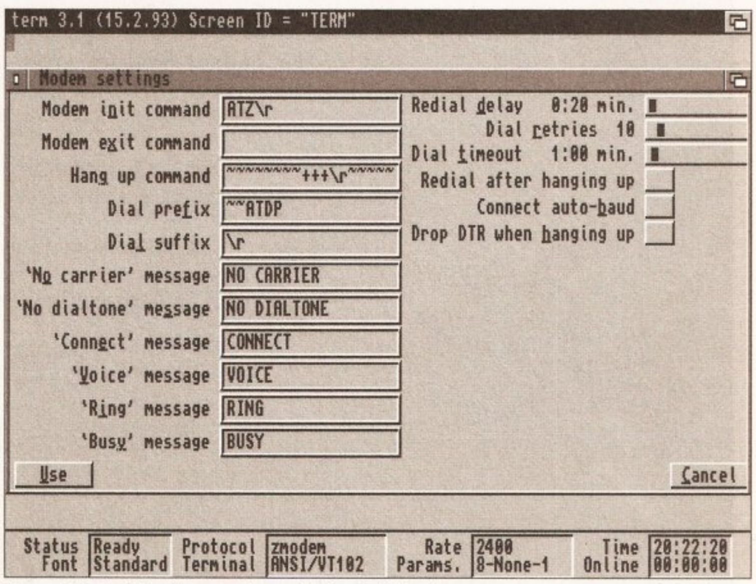
Amiga programs just seem to be getting bigger and bigger. *Term* comes on three Fish disks: 831 contains the main program, 832 a special 68020/030/040 version and the source code, 833 the documentation in DVI and PostScript formats. (Now where did I put those disks with *Post* on them...)

Term is probably the most fully-featured comms program available for the Amiga. It would take the whole PD section to list all its features, but they include:

- Full ARexx control
- XPR transfer support (that is, external protocol libraries are used for file transfer – a sensible way to do things, since it means that a new protocol doesn't mean a new version of the program). XPR libraries shipped with the program include X, Y, Z and JModem, Kermit and CompuServe's QuickB
- Cut and paste of data on-screen
- Auto upload and download
- Unlimited-size scrollable buffer for received data
- VT102, VT220 and ANSI terminal emulation, with support for external terminal emulation libraries
- Phonebook
- Save and print the contents of the screen as an IFF or an ASCII file
- Supports all screen modes, including AGA and ECS modes

Quite simply, if you're a comms nut you really must check out *Term* (assuming that you have AmigaDOS 2.04 or above, which is required). It's a solid, well-written program which performs faultlessly. When I'm using my Amiga for comms, this is the one for me. Indeed, I'm always amazed when a new version appears – I can never believe that there's anything else to add to the program!

Program rating 10/10



Term 3.1: is this the most sophisticated Amiga comms program yet? Put it this way: think of what you want in a comms program, and it's probably here.

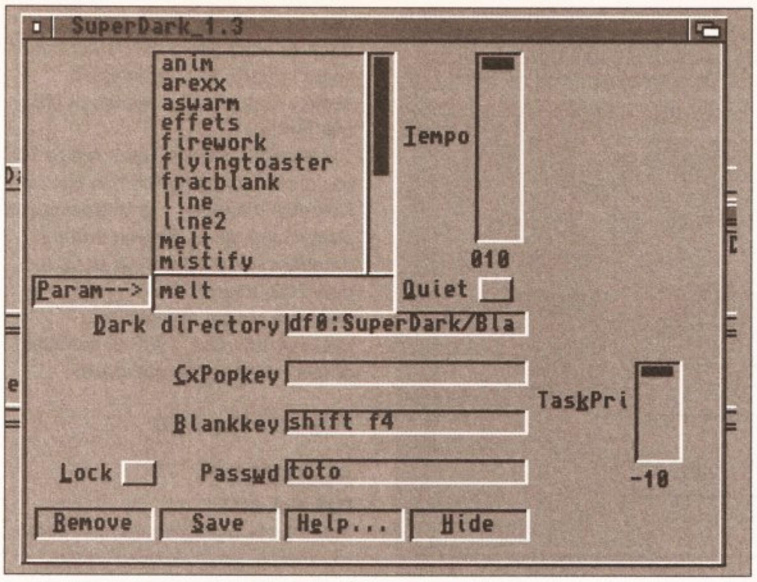
SUPERDARK

Fish disk 835

SuperDark is a screen blanker based on *After Dark,* the most popular Macintosh screen saver (it's also available on the PC). A screen blanker changes the image on your Amiga's screen when your computer hasn't been used for a while – that is, when you haven't moved the mouse, clicked a button or hit a key for some period – to prevent screen burn-in (which is when the phosphors that actually "paint" the screen display become desensitised by too prolonged a static image and you end up with a permanent "ghost" of that image on-screen).

The earlier screen blankers just did exactly what their names suggest – turned the screen to black until you moved the mouse or pressed a key – but now you'll find that most display some sort of pattern instead. *SuperDark* has numerous different "modules" that it can use, from simple bouncing lines to some really very sophisticated and neat displays; for instance, "shuffle" superimposes a grid on the screen and then shuffles the squares around, like one of those puzzles you see people muddling hopelessly on *Crystal Maze* (you'll know what I mean when you see it).

The program is easy to install: just put the directory full of blankers on to your hard disk, put the main program in your **WBStartup** drawer



SuperDark: a screen blanker with some neat modules, based on the Mac and PC program After Dark. More fun than watching the telly, sometimes...

(there is a version of the program supplied for users of OS 1.3, too) and re-boot your Amiga. Hitting the hot-key combination (left-shift 3) brings up the main configuration, from where you can select which blanking module to use, edit any parameters which are associated with it and sample it. The main screen also controls when the blanker will take effect (any time from 10 to 256 seconds of inactivity), and whether to password-protect the screen. If you select this option, then moving the mouse or hitting a key will bring up a password requester – you have to enter the correct password before you can use the Amiga (although you could, of course, just re-boot the machine).

All in all, *SuperDark* isn't at all bad – especially since it's freeware. However, I was a little disappointed with the "Flying Toasters" module. This is incredibly popular in the Macintosh world – it displays pictures of, yes, toasters with wings floating across the screen. But when I tried to use this particular module on my Amiga, I was told that it requires OS 2.0, and so will not run on my machine – which is odd, since I've got an A500 Plus, running AmigaDOS 2.04. Far be it from me to even whisper the word "bugs?"...

Program rating 8/10

SUPER FORMATTER

Fish disk 835

Super Formatter is an Intuition-based disk formatting program intended for use by people who don't like using the CLI version supplied as part of the Amiga's basic operating system.

I had trouble getting it to work at first; double-clicking on the icon produced a message telling me that the Amiga couldn't open my tool "Super Formatter". It turned out, after a little experimentation, that the Fish disk has a .info file called "Super Formatter", but the program itself is called *"SuperFormatter"* (no space between the two words). So, copy the program to your boot disk, enter the CLI, change directory to that drawer and type in the following (all as one line):

```
rename "Super Formatter.info"
SuperFormatter.info'.
```

Now when you double-click on the icon, the program will launch.

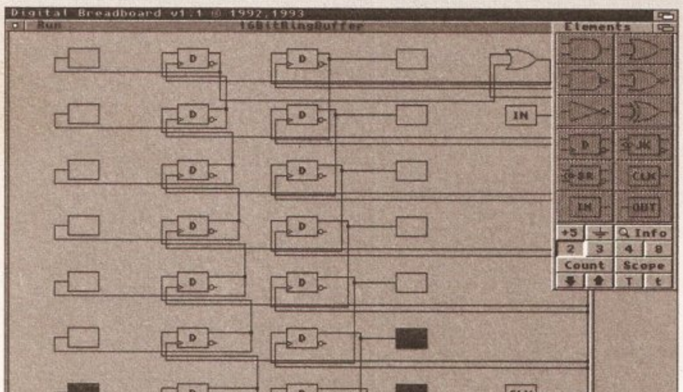
As for the program itself, well, it works as advertised. There are check-boxes for you to specify whether or not to use the FFS (Fast

PUTTING FLIP-FLOPS ON THE BREADBOARD

DBB

Fish disk 844

DBB is short for *Digital Breadboard,* which is a freeware digital logic circuit simulator, written by Dan Griffin, which runs on Amigas with AmigaDOS 2.04 or higher. There are some limitations: primarily, you can't include more than 40 elements in your circuit (so you won't be designing the 68080 chip on your Amiga). On the other hand, the program copes with multiple-input AND, OR, NAND and NOR gates, XOR and NOT gates, D, JK and SR flip-flops, multiple user-defined clocks, switched and pulsed circuits and so on and so on.



Digital Breadboard is an excellent digital circuit simulation program. It's the only one of its kind for the Amiga, it's well-featured – and it's well worth checking out if you're any sort of chip-head!

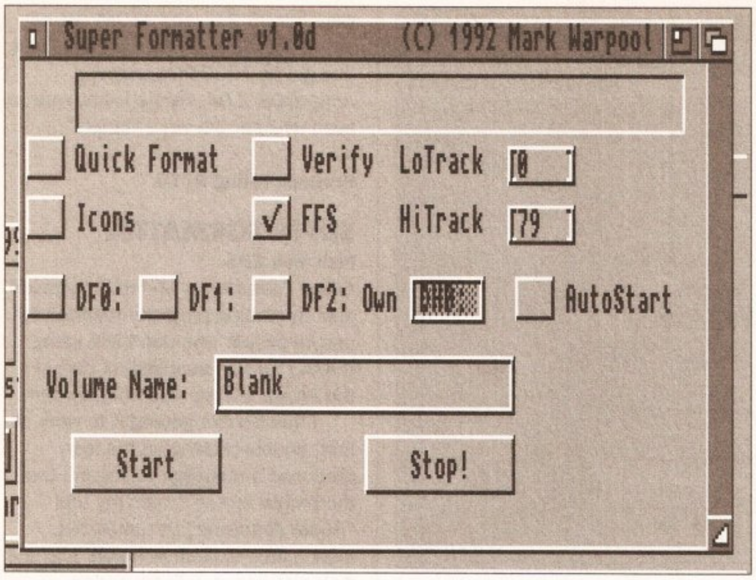
When launched, the program displays a blank design screen (in interlaced mode, so it will be unusable without a monitor), along with a tool palette of elements from which to choose. You place these elements (clocks, gates and so on) on the design screen, and then connect them up simply by clicking on the output of one item and the input of another. When you've finished (at least, when you think you've finished), you can select "run" from the Control menu to see your circuit working.

If you've selected a clock (a device which provides a pulse at regular intervals), you can specify the delay before start, width of the pulse and period between pulses. A normal input can be either a switch or a "pulser"... and so the list goes on. There are even event counters, a variable speed timer and a four-channel "oscilloscope", which you can connect to various parts of the circuit to trace what's going on.

If you're an electronics student doing a GCSE in Control Technology or an undergraduate computer scientist, *DBB* will prove invaluable to you. The author says that he doesn't know of another similar program – I've certainly never seen one for the Amiga. For that reason alone it will be popular, and the fact that it's actually really very good, has more features than you can shake a stick at and is free to boot can only serve to increase that popularity.

Even if you're not an electronics geek, take a look at *DBB* – it's fascinating, just playing around. And, of course, it'll help you understand our series on the internal workings of the Amiga... It's not designed for really high-level work – it doesn't allow you enough elements to make up an eight-bit full adder, for instance, which Gus informs me comprises 97 logic gates, let alone the dazzling stuff we're bringing you this month on pages 57 to 60 – but it's still a remarkable little package.

Program rating 10/10



Super Formatter is an Intuition-based replacement for the CLI Format command. If you're looking for an easy way to format disks, try it out.

Filing System, implemented on OS 2.0 and above), which disk to format, whether or not to include a Trash icon and so on. You can even have the program AutoStart formatting, so that a disk is automatically formatted when it's inserted. And, of course, you can name the disk.

If you still find that you struggle with the Format command from the CLI, get a copy of *Super Formatter* – you need never enter the CLI again.

Program rating 9/10

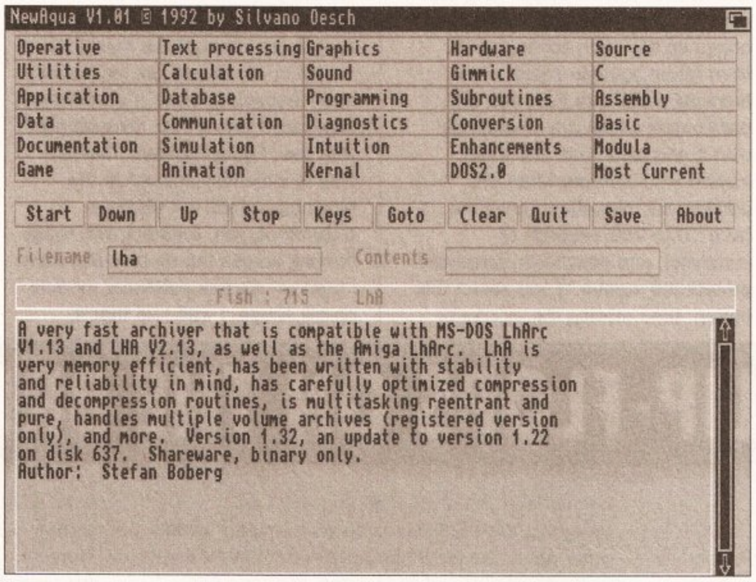
NEWAQUA

Fish disk 837

NewAqua is a replacement for the old *Aquarium* program, which is a database specifically designed to reference the contents of all the Fish disks. It is contained in an archive called "AquaPack", along with *NewFish* and *CliAqua.*

NewAqua comes in two versions: one standard, and the other optimised for 68030-based Amigas. Even the standard version, though, is anywhere up to four times as fast as the old *Aquarium* program when searching for disks. It also now supports a "packed" database – that is, one which has been compressed so that it takes up less disk space. The disadvantage (there had to be one...) is that searching takes around 20 percent longer than on an unpacked database – but if you're running on a floppy disk-only system, you'll be pleased enough to get a version of the database on one floppy, and the extra time taken to search probably won't worry you too much.

Using *NewAqua* is easy; if you know a program's name, just type it in and hit Down or Up – to start searching from the top or bottom of the database. Not sure of the program's name but know some of the text that's likely to be in the description? No problem – there's space to specify that instead. If



NewAqua: a fast, easy-to-use database of all the programs released on Fred Fish's collection of disks... well, the first 740 of them, anyway.

you're looking for a type of program – graphics, for example – click on the category button at the top of the screen, and again hit Down or Up. A useful button is "Most Current", which will scan the database and only produce a listing of the latest Fish disk to contain a version of a specified program.

NewFish enables you to add details of new Fish disks to the database – which is useful, since the database supplied with the package only goes up to Fish disk 740. Again, it's easy to use: it just reads a standard Contents file, as is present on every Fish disk, from whichever disk drive you specify, and adds the details to the database.

Finally, *CliFish* is a version of the database which will only run from the CLI, and which has been designed for people who run bulletin boards from their Amigas. By running *CliFish*, you can give your users access to the Fish database – they enter their search query, and the program comes back with the results in plain text format.

If you're serious about Amiga PD, you really should have some kind of Fish disk database – and *NewAqua* is pretty damn good. Shame that the database supplied only goes up to disk 740, though – and it looks as though a couple of disks are missing, too; disk 739, for example, doesn't exist in the database.

Program rating 9/10

MATHPLOT

Fish disk 850

MathPlot is a program (or do I mean yet another program) which plots mathematical functions on the screen. The resulting curves can then be printed out or saved as IFF files. You can also plot the first and second derivatives of the curves.

The program only works with Kickstart 2.04 or higher, and is shareware; for your DM30 or $20 you get a newer, more fully-featured version. Up to ten functions can be stored in the program at any one time. You can plot them all on the same screen if you want, and include axes; the annotation of the axes is either calculated automatically or entered manually, and you can zoom in to look more closely at a particular area of the plot if you wish. Things like precision of plotting, user-entered interval to plot over and even numerical integration are all supported.

I have to say that it's hard to get excited over this program. I'm sure that students who can't be bothered to plot sine curves and the like by hand will find it useful, but in reality the user-base for a package like this must be fairly small – mustn't it...?

Program rating 7/10

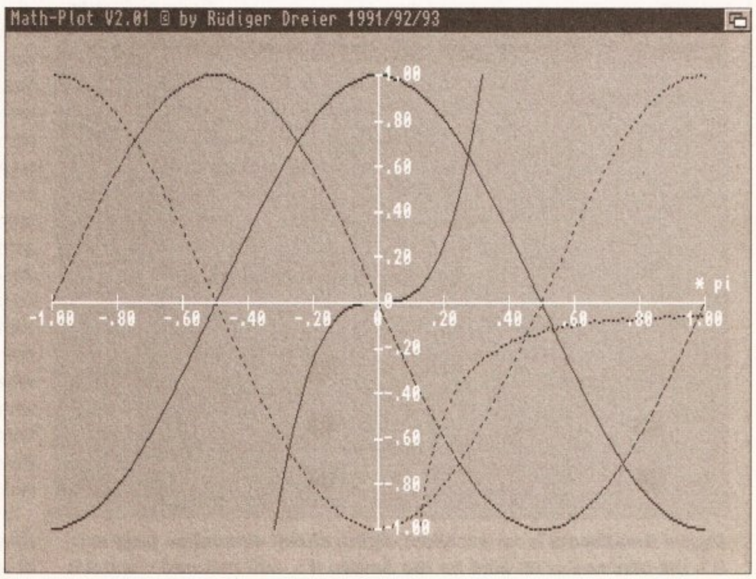
AMIGA-PASCAL

Fish disk 849

Pascal is still a very popular programming language, even though it's now being superseded by C as the language of choice for many professionals. So it's nice to see new versions of the language appearing, even if – as with this one by Daniel Amor – they aren't particularly fully-featured.

Daniel says he's a university student who's written this compiler partly because his course required it, and partly because he wanted a compiler which creates optimised code. He wrote the compiler in Kick-Pascal – although, as he says, it "seems like the old problem with the hen and the egg," it's actually common practice to write at least the first version of a compiler in a different high-level language.

Amiga-Pascal isn't a full version



MathPlot has loads of features for plotting curves, and even printing them out, but it's still not the most exciting program on the planet...

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These fonts will work with all workbench systems v1.3 to v3.0
❑ **300 ADOBE TYPE 1 FONTS** Just over 300 fonts for use with PPage 3.0 & Pagestream 2.1/2.2 only. **£44.99**
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❑ ^+ **V332 PUNT PROGRAM** Predict which horse will win the race
❑ ^+ **V339 SPECTRUM EMULATOR** Data Disk 1: The Adventure Classics
❑ ^+ **V350 BUSINESS CARD MAKER** Design your own Business cards.
❑ ^+ **V366 600 BUSINESS LETTERS** Over 600 Standard Business letters
❑ ^+ **V390 DESK TOP PUBLISHING** Extra features,Text & Graphics Editors
❑ ^+ **V392 AMICASH BANKIN** Best bankin program that I have ever used
❑ ^+ **V394 CHEMESTETICS v2.14** Draws molecules using the calotte model.
❑ ^+ **V401 WINDOWBENCH v1.0 (2)** An excellent Workbench 2 replacement / Upgrade for all WB v1.3 users.
❑ ^+ **V413 WORKSTATION** Not just another WB clone. It's a collection of utilities with the Workbench theme. **(2)**
❑ !- **V420 CURSOR BASIC COMPILER** Compile any Amiga Basic program
❑ ^+ **V424 ANTI-FLICKER** Said to stop the flicker in High Res mode during some programs oberations.
❑ ^+ **V444 PRINTER DRIVER DISK III** Now contains instructions on how to install them. includes over 90
❑ ^+ **V479 CHESS & UTILITIES** A collection of chess related Puzzles.
❑ !- **V484 ADVENTURE SOLUTIONS (2)** Solutions for various games.
❑ ^+ **V489 AMIBASE PRO v2.0** This is most popular PD Database program
❑ ^+ **V490 MESSY SID v2.0** Reads MS-Dos disks, Transfer any text files to & from the PC. So you can do work on an IBM or an Amiga & swap text.
❑ ^+ **V521 PLOTTING & GRAPHICS PLOTXY,** A powerful full featured plotting prog. **PLANS** A computer aided drafting prog. Requires ARP
❑ ^+ **V522 ARP V1.3 : Conman v1.3c** Makes many improvements to Dos. Includes full developers guide.
❑ ^+ **V523 DICE C COMPILER (2)** Matthew Dillons full featured powerful C compiler & environment system.
❑ ^+ **V536 CATALOGUE UTILITIES** A collection of utilities used to Catalog disk/ Video & Tape collections **(2)**
❑ !- **V567 PRINTER DRIVER GENERATOR** A selection of utilities with various excellent Printer Driver Generators.
❑ ^+ **V569 DUNGEON MAPPER v1.1** Can design maps for dungeons & Towns.
❑ ^+ **V573 FILE & HD** HDClick v2.0, Selector to make HD Menus with gad gets. File Minder, For maintaining files & Directories. DosControl, Combines functions of many separate tools. **(2)**
❑ ^+ **V575 HOME BUSINESS PACK** Excellent selection of utilities based on word processing, Data Manag-ement, Spread Sheets, Accounts & Printing. **(6)**
❑ ^+ **V583 ICONEDITOR III v2.0,** Can create Icons upto 640x200 pixels. icons, Edit & Create any icons.
❑ ^+ **V587 GELIGNITE FONTS (2)** A selection of fonts for use with any DTP Package or Dpaint disks.
❑ ^+ **V610 GOLF SCORES v1.84** It will record each round you play, Store it, make up an eclectic score NEW!
❑ ^+> **V611 FOOTBALL LEAGUE EDITOR v1.1** Want to update your teams league position as the results come in.
❑ ^+ **V620 ASPICE v3.2** Full featured program for electric circuit.
❑ ^+ **V621 EDWORD v2.2** is a fully featured & operational Word processor
❑ !- **V624 NIB COPIER v2.0** Will copy in AmigaDos, Index Nibble modes, search mode & special parameter copy.
❑ ^+ **V627 DPAINT FONTS No's 1-3 (3)** The latest selection Fonts for use with any IFF Painring / DTP Program.
❑ !- **V635 IBeM EMULATOR v1.5** Is a CGA Colour IBM-PC Emulator written to run on any Amiga. Shareware version
❑ ^+> **V660 HOME MANAGER** is a great all in one address book with an inventory database & To-do list
❑ ^+ **V661 VERTEX** Create 3d objects without using the X, Y & Z views. Loads Sculpt 3d/4d & Turbo Silver.
❑ !- **V662 DCOPY v3.0 PRO** You can select the speed of the disk drive, Copy modes, Dos, Nibcopy, Ver & safecopy
❑ ^+ **V666 MODELLING OBJECTS (2)** Contains over 20 vector objects in Image format. Perfect with Disk V661
❑ ^+ **V678 DRAW MAP v4.1 (2)** You can generate world maps in detail views.3d or 2d ❑ 2Mb or ❑ 1Mb
❑ ^+ **V681 GAME TAMER v2.2** Get a hold of that extra hard game & Cheat.
❑ ^+ **V684 FONT EDITOR v1.0,** Also contains other utilities. IFF Fonts
❑ ^+ **V685 ASTRO ASTROLOGY PRO** Best Astrology program on the Amiga
❑ ^+ **V686 MULTIDOS v1.12** After this program has been installed your Amiga drives can then read 720k IBM Disks.
❑ ^+ **V688 MAGNETIC PAGES v1.30** Creates disk based magazines with graphics.
❑ ^* **V690 WB 2/3 UTILITES** Contains the programs that should have been with WB 2. Take full advantage of the many NEW capabilities that are available. **(2)**
❑ ^+ **V692 RACE RATER v1.6** for people who want information about horse races.
❑ ^+ **V698 AGRAPH v2.0** Brings the world a cheap draw Bar, Line, Area & Pie chart production/ presentation program.
❑ ^+ **V700 PERM CHECK** Take the chore out of checking the winning lines
❑ ^+ **V701 STRATA v1.0** Is a landscape generater which allows printing from any angle, position or magnification
❑ ^+ **V704 AMOS COMPILER v1.34** Second AMOS Compiler Update.
❑ ^+ **V705 MED v3.21** Excellent update to the famous music program
❑ ^+ **V710 AREXX TUTORIAL** Includes several sample Arexx scripts & sample progs. ARexx comes free on all WB v2.04+ disks
❑ ^+ **V711 UNIX** Contains a working demo of Minix, A Unix workalike. Minix is system call campatable.
❑ ^* **V713 COMUGRAPHIC FONTS** Will work with DPaint v4.1, ProPage, Page stream, Pagesetter & Workbench v2.04+.
❑ ^+ **V715 COMPLETE BIBLE** With the entire text of the New Testament & Torah (Old Testament). 1Mb **(3)**
❑ ^+ **V718 SPECTRUM EMULATOR v1.4** Which is NOW!! 3 times faster. Requires a spectrum computer once.
❑ ^+ **V719 FREECOPY v1.8** Removes protected games copy protection so that the user can install them on HD.
❑ ^+ **V720 DISKPRINT v3.51** A data base which prints & stores disk labels.
❑ ^+ **V724 PRINTER DRIVERS v4** Is an updated Drivers disk : Canon LPB, Canon Bubble jet's & Star 9 pin.
❑ ^+ **V727 ART OF MED 2** Another excellent select of Med tunes.
❑ ^+ **V730 ICON MANIA** An excellent selection of Icon clip Art for your WB Disk.
❑ ^+ **V731 AMOSBROT v1.1a** More fractal types which include Logistic Equation, Coast lines & trees
❑ ^* **V732 WB v2.04+ UTILITIES** FPic DCopy, Boot Menu, Scenery, Huge.
❑ ^+ **V733 SOFTWARE LISTER v1.6** This program is designed to keep a track of your Software collection.
❑ ^+ **V742 ONLINE v1.4** Program will allow you to find cheats within games.
❑ ^+ **F691 PROFESSIONAL C MANUAL v3.0** Is the largest collection of utilities, documents & examples for C, It consists of six manuals, with over 40 chapters **(5)**
❑ ^+ **V757 AMIGADEX v1.61** Creates a card index database system.
❑ ^+ **V758 TEXTPLUS v4.0e** Another update of this excellent Word processor program. Requires Hard drive
❑ ^+ **V759 TEXT ENGINE v4.0** Updated version of the Word processor with **AZSPELL**. Excellent spell checker
❑ ^+ **V761 A-GENE v4.18** The latest version of the popular genealogy database program. By Mike Simpson
❑ ^+ **V762 BBASE v5.5** database with loads of features & it's easy to use.
❑ ^+ **V770 ACCOUNT MASTER v2.12** Excellent Amos written program
❑ ^* **V773 WB v2.04 WINDOWBENCH v2.0** Excellent Workbench replacement for all WB v2.04+ Users **(2)**
❑ ^+ **V777 VOICE CLI v5.5** The idea is to control the CLI with your own voice.
❑ ^+ **V778 RAYSHADE v4.0** Complex Ray tracing package. 2Mb **(3)**
❑ ^+ **V782 FORMS** Create, Edit, Draw , Colour & print your own forms
❑ ^+ **V783 PROGRAMMING TOOLBOX** Many programs to help in your development efforts (most C but some in basic).
❑ ^+ **V784 AREXX (2)** disks which contain Arexx programs & examples
❑ ^+ **V786 PASCAL** This disk contains everything needed to program in Pascal. Includes a68k 68000 assembler & more.
❑ ^+ **V787 PROGRAMMER TOOLS** GadTools to design your user interface to your own programs using all of Amiga DOS 2.0+s new features. Also RegTools.
❑ ^+ **V790 ANIMATION UTLS** Includes CyroUtils for splitting, combining, and creating animations from IFF picture files.
❑X **V791 DIRECTORY ULTS** Includes the most powerful and highly recommended programs which are designed to make CLI & Shell tasks virtually obsolete.
❑ ^+ **V794 GRINDER** Complete graphic conversion package that supports GIF, JPeg, Atari St (Neochrome / Degas), PCX, Targa, TIFF, Ham-E and IFF Format pics.
❑ ^+ **V797 EASY AMOS PROGS (2)** Contain source code for use with Easy Amos.
❑ ^+ **V799 ADVENCED UTILs** SerNet & ParNet, Connect 2 Amiga & share resources via the serial / Parallel ports. My Menu Puts menus on your WB screen.
❑ ^+ **V801 100 PRO PAGE 3 FONTS** Theses fonts are for use with Pro Page & have be checked with the font converter which comes with your Pro Page3.
❑ ^* **V806 WB v2.04 UTILITIES (2)** 2nd collection of WB v2.04+ utilities that take advantage of the NEW capabilities.
❑ ^+ **V811 ELECTROCAD v1.42 & PRO TOYPER** Another Updated on the cad / Electronics drawing Programs.
❑ ^+ **V812 CANON** This disk contains Printer Drivers & Canon Studio, Gives better print output for any 9 pin printer.
❑ ^+ **V814 PC TASK v1.11** is a software IBM-PC Emulator. Allows you to run the majority of IBM software with NO addit-ional hardware. CGA Colour.
❑ ^+ **V815 FILE & HD UTILITIES 2 :** DirWork v1.62 File copier. MegaD Another new update on an excellent File copier like the new Disk Master Pro II in it's Operations. Also contains loads of other programs to help out **(2)**
❑ !- **V817 A500 PLUS EMULATOR** As it sounds will let v1.3 / v1.2 owners run WB v2.04+ software with out any need to purchase to WB v2.0+ chips.
❑ ^* **V819 ICONAUTHOR v1.06** Replacement for IconEdit2.0. It can transform IFF or brushes into resized 2-BitPlane brushes.
❑ ^+ **V820 BBBBS v5.7** Baud Bandit bulletin Board System Ftures include up to 99 file libraries, interface to extra devices
❑ ^+ **V821 SNOOPDOS v1.5** Monitors AmigaDos calls & allows you to see what library, devices, fonts are required.
❑ ^* **V822 BACKUP v3.77** A hard drive backup program that features, multi-drive support, full backup, compression.
❑ ^+ **V823 POWERPLAYER v3.4** Very powerful, user friendly module player. It can handle nearly all module formats can read PP modules & comes with it's own cruncher.
❑ ^+ **V826 AHDM v3.4** Hard Drive Menu. When placed in your startup-sequence, offers a 16 page menu, each page having upto 10 possible actions.
❑ ^+ **V827 REPAIR-IT: NewZap v3.3,** A multi sector file editing system. **FIXDISK v1.2,** Recover's as much as possible from a defective disk **DISKSALVE v1.42,** Creates a new file system structure on another device, with as much data salvaged from the original device.
❑ ^+ **V841 MODULA-2** Contains modula-2 language on the Amiga.
❑ ^+ **V842 SID v2.01** Sid can be used for various operations, The best is the file copier on the Amiga. Recommened
❑ ^+ **V844 DELITRACKER v1.3** Powerful & system friendly music player. Will play over 40 difference types of modules.
❑ ^+ **V845 Q.M.J v5.31** Generate julia sets & complex Quaternion Julia slices. Displays mandelbrots.
❑ ^+ **V846 SCOPIOUS MAPPER** An excellent Dungeon mapping program
❑ ^+ **V847 MONEY MANAGEMENT v1.01** The home account package which allows you to keep track of upto 12 accounts simultaneously
❑ ^+ **V848 SLIDESHOW GENERATOR v3.1** Creates slideshows of pictures in various formats for the amiga.
❑ ^+ **V850 FRAC v1.1** is a graphical Role playing game creator.
❑ ^+ **V856 PICTURE TOOLS** Converts Pictures to other formats and styles.
❑ ^+ **V857 POSTSCRIPTERS** Down loads Postscript Fonts for printing on standard Dot matrix printers.
❑ ^+ **V858 MUSIC MAKERS** A selection of programs to produce music productions. Make your own music
❑ ^+ **V859 AUDIO TOOLS (2)** Sound and Audio production utilities.
❑ ^+ **V861 3d DESIGNER** Various 3d graphic production utilities including CLight, DKBTrace and Surf.
❑ ^+ **V865 IMAGE PROCESSORS** Contains Tools to perform a wide variety of Image Techniques (IFF)
❑ ^+ **V866 MANDEL EXPLORER (2)** This is the best collection of Fractal Generating software on the Amiga.
❑ ^+ **V869 ANIMATION ASST (2)** Will solve many of your animation problems. Includes ABridge, Players, DA & AnimTools.
❑ ^+ **V871 3d HELPER** Are you starting out with 3d graphics. This is what you need.
❑ ^+ **V872 ICON TOOL KIT** Just about every tool you could imagine
❑ ^+ **V873 UGFC v1.1** Will help you translate between Graphic formats
❑ ^+ **V875 SPACE** Help you study, identify the Stars & celestial objects.
❑ ^+ **V876 SYSTEM TEST v4.1** Checks & reports on your computer
❑ ^+ **V879 BEAT DIS MODULES** For use with OctaMED includes a Player
❑ ^+ **V882 MAGNUM v1.4** Another excellent Disk Magazine Creator.
❑ ^+ **V888 TRONI CAD v1.0** The best CAD program for your Amiga. WITH Various power functions.
❑ ^* **V896 TOOLMANAGER v2.0** Includes the ability to add menus to your Tools menu. add WB icons or Windows.
❑ ^+ **V897 OCTAMED v4.0** Save disabled version of OctaMED Pro
❑ ^+ **V899 ABACKUP v2.4** A Powerful backup utility that may be used for Hard Drive backup & File Archiving.
❑ ^* **V900 BOOTJOB v1.0** Include functions to store, install, view or execute any bootblock. Can save BB as executable files.
❑ ^* **V901 FIM v2.2** IntroMaker to create you own Intros. IFF imports
❑ ^* **V902 JCGRAPH v1.1** Demo which can show data as bar,line, planes, stack, blocks, 2d & 3d ect. Outputs in EPS, 3d Geo, AegisDraw and IFF.
❑ ^+ **V903 UEDIT v4.0 (3)** Word Processor with learn modes, Online Help, A teach Mode, copy & paste.
❑ ^+ **V921 COMPUGRAPHIC FONTS** Will work with DPaint v4.1, ProPage3, Pagestream, Pagesetter & Work bench v2.04+. About 30 Fonts **(3)**
❑ ^+ **V924 PLOT MAP v0.85** An extra for use with draw map v4.0 or v4.1
❑ ^+ **V925 SLAUGHTER CHEATS** Another selection of Hacks & Cheats
❑ ^+ **V928 THE LITTLE OFFICE** One of the best disks at the present time.
❑ ^+ **V936 LETTERS & BOILERPLATE** Letters for you to use as your own or cut & pause into a Word Processor
❑ ^+ **V939 ANIM PB v1.2** Will show long sequences of animations or pictures fromn memory or disk.
❑ ^+ **V942 SCREEN BLANKERS** A disk packed with screen blankers. Includes the Twilight Zone blanker.
❑ ^+ **V943 LYAPUNOVIA v1.0** Mind-bogglingly colourful program that makes pictures from a mathematical formula.
❑ ^+ **V945 PROPAGE 3 ENHANCER** Contains over 40 Genies for use with ProPage 3.0, including useful ones like Make Pie Chart & others. Includes structured clipart for unique borders!
❑ ^* **V946 SYSTEM OPTIMIZER** KCommodity gives you memory meters, mouse/keyboard enhancements. REorg will optimize hard / floppy disks for big speed increase. HDMem virtual memory.
❑ ^+ **V947 GNUPLOT** Is a command driven interactive function plotter. Creates stunning plot/graphs of mathematical functions. Req HD & unpacks to 1.6Mb
❑ ^+ **V948 INTUITION BASED BENCHMARKS** A great package with all the popular BMs including Sieve, Dhrystone, Savage, IMath & Matrix.
❑ ^+ **V949 TESTS** Contains all of the classic speed tests and system checks we could find. Includes CPU Speed, A full featured system diagnostic tool & more.
❑ ^+ **V950 GAME CONSTRUCTION** ADL is a programming language and run-time environment designed for the convenient writing of adventure games.
❑ ^+ **V951 PROTECTION** is a collection of utilities aimed to protect your data. Password protects autobooting HD's & Document File. Lock your data files with a passworded incription.
❑ ^+ **V952 x-BENCH v1.0** Complete solution to the replacement Workbench. Contains Degrader, LastHope, View, Virus Checker, Power packer and DCopy2
❑ ^+ **V954 WHOM III (3)** Excellent database which covers Star Trek The Next generation, Classic Trek, Star cops, The prisoner, Blake 7 & Tripods
❑ ^+ **V957 TACKS v1.2** Help you create self-booting animation disks.
❑ ^+ **V958 CLUB LEAGUE** Is a utility that will allows you to edit and keep track of your divisons/leaggue stats.
❑ ^+ **V959 AMIGA_E v2.1b** Specific compiler. E is a powerful and flexible procedural programming language
❑ ^+ **V960 CLEO v1.0** Implementation of a new experimental Pascal like language. Includes Complier and Source
❑ ^+ **V961 CPK v1.0** Render a space filling representations of atoms in mole cules. Handles 3dimensional spheres.
❑ ^* **V962 SUPER KILLERS v3.0 (2)** The latest Virus Killers like BootX v5.23a, which can save any bootblock and install it on another disk as well as check for viruses. VC v6.2 and VirusZ v3.2
❑ ^* **V976 WB v2.04 UTILITIES 6** Next collection of WB v2,04+ utilities.
❑ ^+ **V977 FILE & HD No 5-6** Next Excellent collect of HD utilities. **(2)**
❑ ^+ **V979 NCOMM v3.0** Is a communications program based on Comm v1.34 with lots of very nice enhancements. Has new functions over v2.0
❑ ^* **V980 KICK v1.3** Will down grade A500+, A600, A1200 users machines to run software that would NOT normaly work. Turns them into a Workbench 1.3.
❑ ^+ **V981 FONTS & TEXTURES (2)** Harlequins Presents some High Quality Fonts and Texture disks.
❑ ^+ **V983 MEGA CHEATS v3.0c** Now contains over 500 cheats. just Point & click at the game you want.
❑ ^+ **V984 PROTRACKER v3.0a** The latest updated version from Norway, Varios bugs fixed and about 70 new features, (To many to list them).
❑ ^+ **V986 MAD TEE'S MODULES 2** Excellent menu system for you to listen to the modules with out needing a Tracker program. About 20 Modules.
❑ ^+ **V988 ZIPBENCH v4.0** Another Workbench replacmant but contains excellent utilities like, powerpacker v2.2a, powerplayer, SysInfo, VirusX, Archiver, b-Base, BootIntro, Degrader, Fist Aid Box **(2)**
❑ ^+ **V990 DESKTOP MUSIC WORK SHOP v1.0** Is intended to be a tutorial in electronic music techniques. Its a simple guide & introduction. Requires 1Mb chip Ram and 2 disk drives are required. **(3)**
❑ ^+ **V993 SLIDEMANIA** A selection of very impressive high class pictures.
❑ ^+ **V994 THE MONEY PROGRAM v1.5** Features include upto a maxium of 60 accounts, upto 50 direct paymenys, keyboard short cuts. Contains documents
❑ ^+ **V1000 GRAPHPRO v1.0** Written with Amos professional by David Jordan. Basically this program takes a set of data, plots them on a graph.
❑ ^+ **V1001 VMORPH v2.0b** By Lee Wilkie will allow you to create smooth morphs/warps between two different images over a period of frames to create an animation. Requires 1Mb
❑ ^+ **V1002 RAMOS PRO FOR AMOS PRO** If you have Amos Pro then this disk make your programs Boot without having to use your Amos pro even time.
❑ ^* **V1003 NICKPREFS** Is an enhancement to WB 2/3 which adds 3 new preferences WBPicture, BuzyPionter & Floppy.
❑ ^+ **V1004 VIEWTEK** Picture viewer which supports, AGA/ECS, 24-bit ILBMs, Shows JFIF, JPEG & most ANIM Op anims
❑ ^^ **V1005 WB v3.0+ UTILITIES** Is the first in a series of upcoming disks for the 1200 & 4000 Computers
❑ ^+ **V1009 TURBO TEXT v1.1** Excellent Word Processor. Very impressive version with all the features who would need.
❑ ^+ **V1014 POOLS PREDICTION TOOL2** Need another helping hand with the Pools then this is it.
❑ ^+ **V1016 OCTAMED v2.0** Music editor which was designed for making music for programs. **(FULL & NEW VERSION)**
❑ ^* **V1017 POST v1.86** An excellent Postscript interpreter for the Amiga which implements the full Adobe language **(3)**
❑ ^+ **V1020 SCROSS STITCH v3.7** Demo of the full regersted version
❑ ^^ **V1021 WB 3 SCREENS** Enhance your Workbench disks backgrounds with theses nice full coloured pictures
❑ ^+ **V1022 LITTLE TRAVELLER v1.1** Shows a world map & you can select any country for travel information, Zooms up another close up map with more detail.
❑ ^+ **V1023 QUIZ** Contains Questions & Answers with the option to add
❑ ^^ **V1024 MANDELSQUARE v1.6** Program to generate enhanced AGA chip set Mandelbrot set images, requires an 020+ CPU & a numerical coprocessor. You can create 256 colour coloured pics
❑ ^* **V1025 TERM v3.1** Comms program Features Full Arexx control, Xpr transfer, filetype ident after download, cut & paste, point-and-click, auto upload/ download, VT102/VT220, Ansi emulation, powerfull phonebook & AGA support **(3)**
❑ ^* **V1034 ADM v1.01** A flexible address database with loads of features to many to list here. Comfortable to use.
❑ ^+ **V1035 FES BASIC** Just in time for all the new machines which do not have Basic with thier machines any more.
❑ ^* **V1037 A1200 WB HACKS** An excellent collection of Utilities and Hacks
❑ ^+ **V1038 AMOS PRO UPDATER v1.11** First Update to the Amos Professional.
❑ ^^ **V1039 WORKBENCH 3.0 INSTALL** If you need to install your A1200 hard disk then you need this disk. Excellent.

GAMES SELECTION

❑ ! - **1073 TETRIS ORIGINAL** This is the closest game to the original tetris
❑ ^+ **1420 DTRIS** If you want a1 or 2 player Tetris this has to be 1 of them.
❑ ^+ **1561 TRITWIS** Contains 1 player, 2 player & 3 Payer game options.
❑ ! - **1747 LLAMATRON GAME 2001** By Jeff Minter & an excellent production.
❑ ^+ **1749 SCRAMBLE** 'The Original' Remember that old classic game
❑ ^+ **1870 PATIENCE'S** Play vs the computer or another human player.
❑ ^+ **1977 POM POM GUNNER** Shoot down the incoming world wor II air planes in this Operation Wolf game
❑ ! - **2018 JETMAN** Another Spectrum classic converted to the amiga. It's JetPak with all the original sounds.
❑ ^+ **2022 SEA LANCE** The first Silent Service type sub war game on PD
❑ ^+ **2054 ATIC ATAC** A rendition of the game from the original Spectrum
❑ ^+ **2162 BATTLE OF BRITIAN WAR GAME** 2 Strategy war games.
❑ ^+ **2164 DUNGEON ON NADROJ** This is the best Dungeons & Dragons Public domain type game. Load Wb
❑ ^+ **2220 STRATEGIC GAMES** Eternal Rome, Lords of Hosts, In Moonshine.
❑ ^+ **2221 MIND GAMES 21** of the best challenge your mind not your shooting skills.
❑ ^+ **2272 BLACK JACK LAB** Play all the popular versions of Pontoon
❑ ^+ **2278 CARD SHARP** A professionally presented selection of solitaire games.
❑ ^+ **2279 SUB ATTACK v1.0** Control the torpedoes & sink the enemy
❑ ^+ **2280 DIPLOMACY** Classic strategy game loosely based on World War 1. 2Mb
❑ ^+ **2313 REVENGE OF THE MUTANT CAMELS** The ride of a life time with camels
❑ ^+ **2396 PETERS QUEST** This is truly an excellent platform game for all ages.
❑ ^+ **2411 TOTAL WAR** A strategy world conquest Risk type game. 1 or more players
❑ ^+ **2432 GOLDEN OLDIES** Galaga, Galaxians, Space invaders, Asteriods, Batty & Missle Command.
❑ ^+ **2436 DRAGON TILES** Mahjong is a ancient chinese game with coloured tiles.
❑ ^+ **2447 COINDROP** Fruit Machine simulator with various gamble modes.
❑ ! - **2448 CRAZY SUE** Another first rate cute school girl platform game.
❑ ! - **2450 SMASH TV** Simular to the arcade original machine. Graphics & sound
❑ ^+> **2480 FRUIT MACHINE 2** As near as poss to the Arcade machines
❑ ^+ **2482 DESCENDER** Is a clone of the arcade, Tempest vectorized graphics game
❑ ^+ **2483 INTRUDER** Is a Multi level Berserk clone with smooth graphics.
❑ ^+ **2484 CATACOMB v1.7** Graphical adventure game set on a small island in the middle of the land of EXOUSIA
❑ ^+ **2485 IRON CLADS** (1Mb) Update to the excellent Strategic War Game **(2)**
❑ ^+ **2491 LEGEND OF LOTHIAN v1.02** An adventure game in the vein of Ultima.
❑ ^+ **2494 HUNCHBACK** This is a conversion of the old classic game.
❑ ^+ **2498 AMOS CRICKET** Excellent arcade cricket simulator with graphics.
❑ ^+ **2534 BATTLE CARS II** Get behind the wheel of a heavily armed car as you race round courses.2 players with the computer link
❑ ^+ **2535 SUPER PACK MAN 92** This is the best Pack man to date with super smooth scrolling & excellent graphics.
❑ ^+ **2613 DUAL** 2 player game where you control armoured tanks & rockets.
❑ ^+ **2614 TETREN** Is a 1 or 2 player Tetris game. 2 player is Head 2 Head
❑ ^+ **2615 WAR** Strategy war game in which you control a fleet of space craft.
❑ ^+ **2617 GOLDEN OLDIES 2:** Croak, Excellent 1 or 2 player version of Frogger. BiPlanes is the most additive games we have played here 2 player only. TrailBlazer, C64 Classic. Scamble.
❑ ^+ **2620 DR MARIO** A Tetris like game where you move coloured pills down the screen. 3 in a row go's
❑ ^+ **2621 ETERNAL ROME** Start the roman Empire from 32BC. Build fleets, armies & send them into battle.
❑ ^+ **2622 DONKEY KONG** Original platform game in which you must rescue the girl. + Mad Bomber.
❑ !+ **2674 INTERPID** In the Artic ice you control a tank on a mission to rescue hostages in this superb Amiga origional
❑ ^+ **2676 MORIA v5.4** Loads of new features, better graphics, larger dungeons, screen updates, overview of dungon's map
❑ ^+ **2710 CLASH OF THE EMPIRES (2) v2.1** Strategical War game By T.A.Sear
❑ ^+ **2712 ACT OF WAR** Simular in style to the classic game Laser Squad. You control a team of special troops.
❑ ^+ **2715 TANK ATTACK** This is a 1-4 player version of the Classic Cartridge game Combat. 4 Joysticks can be used.
❑ ^+ **2716 RESCUE** Spaceship game simular to Scrample. Excellent graphics
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❑ ^+ **2723 SOLITAIRE** Popular card game on the amiga. Excellent version.
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❑ ^+ **2987 BOMB JACKY** A classic conversion not as good as the original but it's as the best yet
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❑ ^+ **3038 TANK HUNTER v1.0** Another two player Tank Attack game with various levels
❑ ^+ **3039 ASTEROIDS II v0.85** This is the best version of Asteroids I have ever seen, If you like Asteroids games then this is a Must..
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STAR TREK & DEMOS

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of the language; the keywords it supports are PROGRAM, VAR, INTEGER, BEGIN, END, WHILE, DO BEGIN, :=, +, -, * and /. The documentation, too, is rather sparse – less than 4K. "If you'd like to know which functions and procedures this compiler understands then please look at the example file," says Daniel, and you'll find that since the only example file is one which just prints the first 46 numbers in the Fibonacci series, some experimentation might be required.

Still, if you're just starting out in Pascal programming and you want a language which runs fairly quickly and will let you compile the sort of beginners' example programs that you find in most textbooks on the subject, you could do worse than take a look at Amiga-Pascal. Included in the distribution are the very popular *A68K* assembler and *BLINK*, a program which turns the output of *A68K* into an executable file.

Program rating 8/10

UNIXDIRS

If you're a Unix user as well as an Amiga fan, you'll probably find that half the time you type ".." in the CLI when you should have typed "/" instead. For non-Unix users out there, ".." means "the next directory up in the tree structure", as "/" does on the Amiga. Likewise, "." in Unix means "the current directory" – and again, this will give an error if used on the Amiga. It's the age-old problem of having to change your mind-set as you change programs.

To avoid the hassle of having to remember to use Amiga file specifications all the time, Martin Scott has written the tiny utility *UnixDirs*, which patches calls to DOS so that you can use ".." and "." with no problem.

It's small, it works, it's useful to some people. Can't say fairer than that. Oh, except that it's inexpensive to boot.

Program rating 10/10 AS

WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board is that often the latest software is uploaded as soon as it's available. On the down side, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the bulletin board as well).

There is a growing number of bulletin boards with a wide range of Amiga software available for download. Check out 01-for Amiga (071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a bulletin board, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and you'll find a comprehensive list of names and addresses below. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between the companies which charge 99p and those which charge £2.50 – well, try both types. There are brilliant, totally professional PD houses which charge less than a quid, and there are totally incompetent (dis)organisations which charge more than twice that.

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Amiga Shopper Buyer's Guide tells you what's hot and what's not in the Amiga market place. It's a comprehensive guide to help you make the right buying decisions. We'll be updating it as new products are released.

This month we deal with public domain software. For reasons of space, it may not include each and every PD product ever produced for the Amiga, but rest assured that all the major titles are here.

BUSINESS SOFTWARE

Program	Library	Disk	Type	Issue	Rating
TextPlus 3.0	PDSoft	V261	Word processor	1	****
TextEngine 3.0	Digitz	277	Word processor	13	***
WordWright	PDSoft	V28	Word processor	13	****
AZSpell	Digitz	Utl277	Spell checker	13	****
PowerSnap	Fred Fish	542	Grab screen text as ASCII file	8	*****
UEdit	AmigaNuts	1162	Text editor	8	****
AmigaFox	Office Choice	U173	Combine text with graphics	8	**
AmiBase Pro 3	AmigaNuts	–	Powerful database	9	****
Liner	Fred Fish	285	Ideas processor like Flow	10	****
NewPRT	Digitz	149	Printer drivers for PageStream	10	****
PageStreamFonts	Digitz	149	Fonts for PageStream	10	*****
EasyBanker	GTS	Home2	Home finance program	10	****
HomeHelp	GTS	Home1	Computerised grocery lists	10	****
I-Man	GTS	Home2	Inventory list management	10	***
MultiPlot	Fred Fish	467	Data graphing program	7	****
Power Planner	Deja Vu	Licenseware	Diary/telephone book	15	***
Power Base	Deja Vu	Licenseware	Database	15	*****
Cruiseword	PD Majik	–	Word processor	16	**
AmiCash	PS Soft	V630	Home accounts	16	***
Home Manager	PD Soft	V660	Personal organiser	16	*****
Word Power	Deja Vu	Licenseware	Spell checker	17	****
WBase	Anglia PD	U4015	Pop up Workbench database	18	**
PowerText	Deja Vu	Licenseware	Word processor	18	*****
Account Master	Various	–	Home accounts program	19	****
AmigaDex	PD Soft	V757	Pop up address book	19	*****
Will&Testament	PD Soft	V706	Template for wills	19	*****
Forms Really Unlimited	PD Soft	V782	Create your own business forms	21	*
Philo	Startronics	N/A	Databases for beginners	21	*
Atbl	Fred Fish	Fish 746	Unix-like table formatting utility	22	****
PaperBack!	Fred Fish	Fish 749	Create printed booklets with ease	22	*****
Epoch	NBS	U726	Pop up address book and calendar	22	**
BuddBase 1	Deja Vu	L/28	Powerful database program	22	*****
JCGraph Demo	Fred Fish	Fish 760	Demo of shareware graph program	23	*****
Stock Control 1.0	Deja Vu	L/111	Powerful stock control utility	23	****
WFILE	Fred Fish	776	Convert PC and Mac text files	24	****
Home Business Pack	Anglia PD	HB1	Database, spreadsheet, wp	25	*****
Inspire Demo	Fred Fish	815	Powerful word processor	26	*****
DataBench	Fred Fish	820	Very good PD database	26	****
QuickFile	Fred Fish	820	Absolutely awful PD database!	26	None!

MUSIC UTILITIES

Program	Library	Disk	Type	Issue	Rating
Nutcracker Suite	17-Bit Software	N/A	Tchaikovsky's Nutcracker suite	21	****
CDTV Player	Fred Fish	Fish 759	Play Audio CDs from WB on A570	23	*****
MED 3.11	AmigaNuts	973	Sound Tracker	1	*****
Module Processor	AmigaNuts	864	Convert modules to executable	1	***
Rippers Disk	17Bit	1055	Rip modules from memory	5	****
Sound Ed	Fred Fish	486	Sample editor	5	****
Module Master	TBAG	58	Play modules in various formats	9	****
K1 Editor	Fred Fish	332	Patch editor for Kawaii K1	10	*****
CZED	Fred Fish	223	Patch editor for Casio synths	10	*****
Desktop Harp	Various	–	Collection of tunes	18	*****

EMULATORS

Program	Library	Disk	Type	Issue	Rating
IBEM	VirusFree	1485	PC compatibles	3	****
A64	AmigaNuts	1030	Commodore 64	3	*****
ST Emulator	Digitz	Utl149	Atari ST	15	***
QL Emulator	AmigaNuts	1030	Sinclair QL	3	***
ZX Emulator	AmigaNuts	1030	ZX Spectrum	3	****

VARIOUS UTILITIES

Program	Library	Disk	Type	Issue	Rating
WordFinder-Plus	Virus Free PD	Licenseware	Crossword puzzle solver	21	****
File & HD Utils 3	PD Soft	V815	Various file and hard disk utilities	21	****
FindIt	Fred Fish	Fish 731	Search for named files on any disk	22	****
Fontviewer	Fred Fish	Fish 732	Keep track of all your bitmapped fonts	22	****
Megad 2.0	Fred Fish	Fish 736	Brilliant SID-like directory utility	22	*****
CFX	Fred Fish	Fish 750	File type identifier	22	*****
Pools Tools	NBS	U725	Pools predictor	22	***
Boot Logo	Fred Fish	Fish 754	Display picture during boot up	23	****
PopUpMenu	Fred Fish	Fish 756	Modified Workbench menus	23	****
GeoTime	Fred Fish	Fish 758	World Time Zone Display	23	*
ABackUp	Fred Fish	Fish 759	Hard Disk backup utility	23	****
ARestaure	Fred Fish	Fish 760	Restore deleted files	23	*****
BootJob	Fred Fish	Fish 760	Store game bootblocks on disk	23	**
S-Text	Fred Fish	Fish 760	Create stand-alone text files!	23	**
Assassins Handy Tools	Aardvark PD	U186-188	Three disks of handy utilities	23	***
A-Gene	AmigaNuts	933	Genealogy program	1	****
Command.COM	17Bit	866	CLI commands in RAM	2	***

PRODUCT LOCATOR

MessySID 2	PDSoft	V490	Access PC disks with ease	13	*****
Elements	Fred Fish	593	Periodic table of elements	13	****
Cass 1.1	Fred Fish	579	Make your own cassette covers	13	***
Badger	Fred Fish	543	Event scheduler	13	***
School TimeTable	AmigaNuts	1100	Generate school timetables	5	***
Arq	CIX Download	–	Improved system requesters	8	*****
LC24-200 Fonts	NBS	L503	Fonts for Star printers	8	****
Menu Runner	AmigaNuts	1024	Run programs from menu	8	***
ButExchange	Fred Fish	494	Reverse mouse buttons	9	****
DeafLab	Fred Fish	494	Sign language utility	9	***
PWKeys	Fred Fish	494	Manipulate windows with hotkeys	9	***
InputLock	Fred Fish	494	Turn off mouse and keyboard	9	****
RunMe	AmigaNuts	1186	Run programs from menu	9	*****
Hard Drive Special	GTS	–	Collection of hard drive utils	9	*****
ScreenMOD	TBAG	58	Modify screens and windows	9	***
Words 3	AmigaNuts	–	Solve anagrams	9	***
ClockTick	TBAG	58	2.0-like clock mouse pointer	9	****
FileSearch	Fred Fish	531	Find files on a hard disk	11	***
Format 1.1	Fred Fish	535	Replacement disk formatter	11	*****
PowerPacker Utils	Fred Fish	542	Utilities for PowerPacker	11	***
LabelMaker	Fred Fish	548	Create disk labels	11	***
ToolsDemon	Fred Fish	561	Run programs for 2.0 Tools menu	11	****
Filer	Fred Fish	562	SID clone for Workbench 2.0	11	****
AWP	Fred Fish	554	Animate WB2.0 clock pointer	11	****
RMBShift	Fred Fish	547	Select multiple icons	11	****
Smart Icon	Fred Fish	316	Iconifies windows	10	***
Flash Disk	GTS	Utils2	Disk optimiser	10	****
Snap 1.4	Fred Fish	326	Grab screen text into clipboard	10	****
SysInfo	Fred Fish	571	System information program	11	*****
MKSLens	Fred Fish	574	Magnify area of screen	11	***
Font Manager	Digitz	149	Manage your bitmap fonts	10	****
Recover	Digitz	149	Rescue files from corrupt disks	10	***
Track Display	GTS	Utils1	Shows position of drive heads	10	***
FastDiskII	GTS	Utils1	Disk optimiser	10	***
FileMaster	GTS	Utils1	Binary file editor	10	*****
DiskSpeed	GTS	Utils1	Disk drive benchmark program	10	****
Formatter	GTS	Utils1	Replacement disk formatter	10	***
SetNoClick	GTS	Utils1	Turn off annoying drive click	10	***
DevRen	GTS	Utils1	Rename devices including DF0	10	****
LockDevice	GTS	Utils1	Better AmigaDOS 'Lock' command	10	****
Label Print	Fred Fish	227	Disk label printer	10	***
Banner	TBAG	52	Print huge banners	10	****
Avail Mem	Fred Fish	285	Graphical memory monitor	10	***
DCopy	AmigaNuts	700	Disk copier	10	****
MessyDOS	NBS	U619	Read and write PC disks	6	*****
Master Virus Killer	AmigaNuts	971	Virus killer	1	****
Imploder	Fred Fish	422	File compressor	7	***
ARTM	17Bit	1274	System monitor	7	*****
File and HD management	PD Soft	V573	Hard drive utilities	15	*****
Sid 2	17Bit	–	Directory utility	16	*****
File and HD management 2	PD Soft	V575	More hard drive utilities	16	***
Outline fonts	George Thompson	–	For ProPage and PageStream	16	*****
Electronic baby book	PD Soft	V658	Record your baby's details	16	****
Astro 22	PD Soft	V685	Astrology program	17	****
Touch typing tutor	NBS	CLU03	Teach yourself touch typing	17	****
Magnetic Pages	PD Soft	V688	Create your own disk magazine	17	*****
HAM Radio	Aardvark PD	–	HAM radio utilities	18	****
MegaStation	Five Star PD	U195	More CLI commands	18	***
C Commands	PD Soft	V586	Even more CLI commands	18	***
Morse Tutor	Deja Vu	L101	Teach yourself Morse Code	19	*****
Minix Demo	PD Soft	V711	Demo of Unix-like OS	19	*****
Printer Drivers	PD Soft	V724	Star and Canon printer drivers	19	*****
Icon Mania	PD Soft	V730	Lots of new icons	19	**
Anti-Virus	Soft Expression	U155	Kill those viruses	19	*****
CG Fonts	PD Soft	V713	Lots of Compugraphic fonts	19	****
X-Stitch	Deja Vu	Licenseware	Pics to knitting patterns	19	****
Distance	Deja Vu	Licenseware	HAM radio utility	20	****
Main Event	Soft Expression	U149	Event scheduler	20	****
Disk Manager 2	Various	–	Disk cataloguing program	20	****
VCR Tape Filer	Fred Fish	721	Organise your video collection	20	***
AniMan	Fred Fish	722	Voice control your Amiga	20	***
DiskMate	Fred Fish	723	Disk copier	20	*****
BackUp	Fred Fish	724	Hard disk back-up utility	20	*****
HAMLab 2 Demo	Fred Fish	726	Powerful image processor	20	*****
AutoSave	Fred Fish	771	Execute ARexx script at regular intervals	24	****
NicePrefs	Fred Fish	780	Extra WB 2.0 Preference programs	24	*****
LS	Fred Fish	772	Very powerful Unix-like 'LS' command	24	*****
Twilight Zone	Fred Fish	782	After Dark-like screen blanking utility	24	*****
Ego Mouse	Fred Fish	778	Make your mouse point where it's going	24	**
Macro 1.0	Fred Fish	786	Record and playback user inputs	24	****
VirusZ	Fred Fish	786	Virus Killer	26	*****
QC	Fred Fish	788	Display information on CLI/Shell	24	***
QMouse	Fred Fish	789	Mouse accelerator utility	24	*****
AIBB	PD Soft	V948	Standard benchmark program	25	*****
Cook & Stitch	GTS	-	Learn to cook, stitch and brew beer!	25	***

PRODUCT LOCATOR

KingFisher	GTS	-	Database of Fred Fish disks	5	*****
File & HD Utilities 6	PD Soft	V978	Selection of file and hard disk utilities	25	**
Sksh	Fred Fish	791	Unix 'ksh'-like Shell	25	*****
DragIt	Fred Fish	792	Drag a window without using drag bar	25	*****
LockIt	Fred Fish	798	Password protect your files	25	****
Password	Fred Fish	804	Password protect a hard drive	26	****
XSearch	Fred Fish	804	File searching utility	26	***
StarClock	Fred Fish	814	Display time in StarTrek fashion	26	***
FastIntroMaker	Fred Fish	814	Create your own scolly demos	26	****
Install 1.2	Fred Fish	817	Workbench Install disk utility	26	*****
SysInfo 3.11	Fred Fish	-	Latest version of system analyzer	26	*****

COMMS UTILITIES

LHA 1.11	Fred Fish	593	Archiving utility	13	****
Phone Line Watcher	TBAG	58	Keep track of phone bill	9	****
Term 1.8A	Fred Fish	534	Terminal Program for WB2.0	11	*****
NComm	17Bit	1275	Terminal Program	7	****
BBBBS	Fred Fish	729	Bulletin Board System	20	****

PROGRAMMING UTILITIES

GadTool Box	Fred Fish	Fish 731	Create Intuition font ends	22	*****
ICalc	Fred Fish	Fish 742	Brilliant Shell-based calculator	22	*****
MegaEd	Fred Fish	Fish 743	Powerful text editor	22	*****
Stripit	Fred Fish	Fish 750	Strip comments from ascii source code	22	****
DICE	Fred Fish	443	C Compiler	3	*****
Copper Master	AmigaNuts	1083	Generate Copper Lists	5	***
BRef	Fred Fish	494	BASIC cross referencing utility	9	****
Power Logo	EdLib	24	Enhanced Logo Interpreter	9	***
MIDI Library	Fred Fish	227	Program MIDI applications	9	*****
PCQ Pascal	AmigaNuts	1113	Pascal compiler	6	****
NorthC	AmigaNuts	1112	C Compiler	6	****
Acc Assembler	AmigaNuts	–	Fast Assembler	6	*****
Remm and Rams	Deja Vu	Licenseware	Map editor and scroller utilities	17	***
Frac	AmigaNuts	1251	Adventure game creator	18	****
Map Editor	AmigaNuts	–	Map editor for AMOS	19	****
DPU	Fred Fish	721	Hex disk and file editor	20	****
Amiga E	Fred Fish	-	Programming language compiler	26	****

GRAPHICS UTILITIES

DPaint Tutorial	Soft Express	U160	Comprehensive DPaint tutorial	22	*****
CMDemo	Fred Fish	Fish 757	Demo of ASDG's CineMorph	23	***
SpectraPaint	Slipped Disk	19	Paint package	3	****
Deluxe Draw	Slipped Disk	18	Paint package	3	**
AMOS Paint	Deja Vu	83	Paint package	3	***
HAMLab	AmigaNuts	1149	Image processing	3	**
3DFont	17Bit	1007	Text to Sculpt Object	3	***
SkyPaint	TBAG	37	Text-based graphics	3	***
SlideShow Kit	VirusFree	1465	Create your own slideshows	3	****
Mandel Mountains	Softville	751	Creates 3D Mandelbrots	5	****
3D Objects Disk 1	AmigaNuts	–	Collection of Sculpt Objects	8	****
PictSaver	Fred Fish	543	Grab screens in IFF Format	9	*****
LandBuild	AmigaNuts	1190	Fractal landscape generator	9	**
Video Text Displayer	AmigaNuts	1199	Basic text scroller	9	***
Converters	17Bit	1221	Image conversion tools	9	***
Vector Designer	AmigaNuts	–	Vector graphics designer	9	**
Plasma	Fred Fish	573	Fast fractals program	11	***
BezSurf 2	Fred Fish	315	Create shaded 3D objects	10	***
DrawMap	Fred Fish	315	Generate maps of the world	10	***
Sprite Designer	AmigaNuts	1102	Create animated sprites	6	**
ImageLab	PDSoft	V518	Image processing program	12	****
Desktop video pack 2	Anglia PD	–	Various DTV utilities inc titler	17	***
FracScape	Various	–	Fractal landscape generator	18	*****

EDUCATIONAL SOFTWARE

WarBook	Asgard Software	Freeware	History of World War 2	21	***
ChemBalance	Fred Fish	Fish 759	Balance chemical equations	23	****
Learn&Play	Riverdene	Mis637	Maths/Reflex/Logic	5	****
Simon	Deja Vu	APD135	Reflex/Memory	5	***
Space Maths	Deja Vu	APD135	Maths	5	****
TouchStones	Deja Vu	LPD18	Logic	5	****
Shapes	Riverdene	GAM907	Maths/Logic	5	****
Quingo	Deja Vu	LPD21	3 'R's	5	***
Treasure Search	Deja Vu	APD2	Maths/Logic	5	***
JigMania	Deja Vu	LPD13	Maths/Logic	5	****
Spell4Fun	AmigaNuts	1146	Spelling	9	****
Maths4Fun	AmigaNuts	1146	Maths	9	****
XTables	AmigaNuts	1146	Maths	9	*****
Runes	DTP	OS125	Mystic runes explained	18	***
4 Stroke Engine	PD Soft	V738	Demonstrates 4 stroke engine	19	****
Complete Bible	PD Soft	V715-717	Complete Bible on three disks	19	****
Constellations	Astronomy News	–	Info on stellar constellations	20	***
Maths Reflex	Anglia PD	C728	Test your maths	20	****
CPK	Fred Fish	809	Create rendered molecule illustrations	26	****

FOR SUPPLIER INFORMATION ON ALL THE PRODUCTS LISTED ABOVE SEE UK PD HOUSES PAGE 114

BUYING ADVICE FOR SHOPPERS

Whether you're buying over the phone or at a local store, here's our advice on getting what you want

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that it works properly.
- Make sure you have all the necessary leads, manuals or other accessories you need.
- Don't forget to keep your receipt.

BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.
- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

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HOW TO PAY

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Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit-making operations. AS

A CHECKLIST FOR MAIL ORDER BUYING

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- **Beware of companies that do not include an address in their adverts.**
- **If ordering goods of more than £100 in value, always try to use a credit card – if anything goes wrong, you will be legally entitled to claim against the credit card company, even if the retailer has gone bust. You may also get extra insurance – check with the credit card company.**
- **Always buy from the most recent issue of *Amiga Shopper.***
- **When your order arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier. If it doesn't work, make the obvious checks such as the fuse, but don't try to fix the product.**
- **If a problem does arise, contact the supplier in the first instance and calmly and politely explain your problem. In most cases these things are merely a mix-up or a misunderstanding that the supplier will happily put right. If you think you have a genuine grievance that has not been resolved, you might consider contacting your local Trading Standards Officer (the number will be in the phone directory).**
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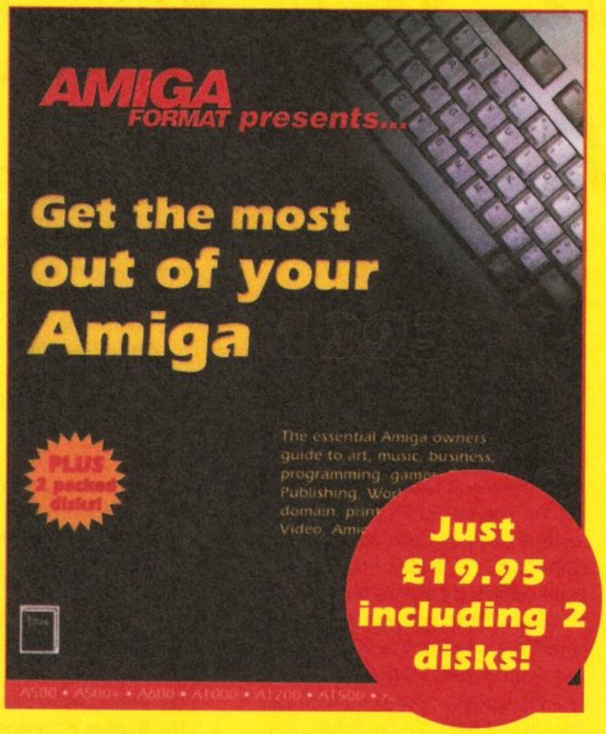
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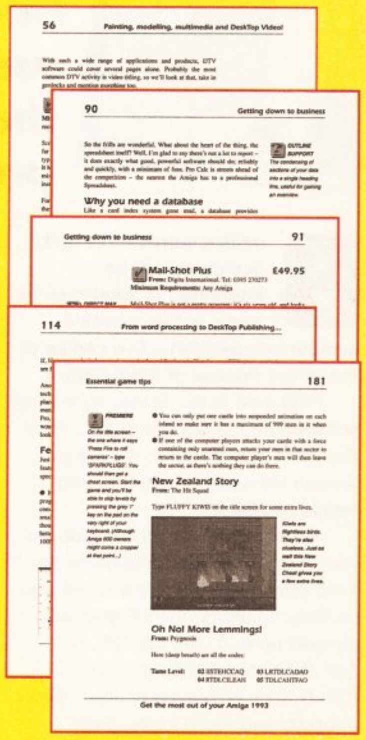
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ANSWER:

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(...Cont. on p2194)





Get the Most out of your Amiga 1993 is the third edition of the best-selling Amiga title first launched in 1991. The aim is simple: to produce the most authoritative, comprehensive and up-to-date guide to the Amiga, its uses and its software. Separate sections are devoted to specific subjects like music, word processing etc. and they're structured so as to provide background information about that area followed by specific product recommendations.

The Amiga market continues to expand at a terrific rate following last year's hardware launches. Because of this, **Get the Most...** has been completely rewritten for 1993, and in the process has swelled to well over 300 pages. Also included are two disks packed with specially-selected public domain and shareware software.

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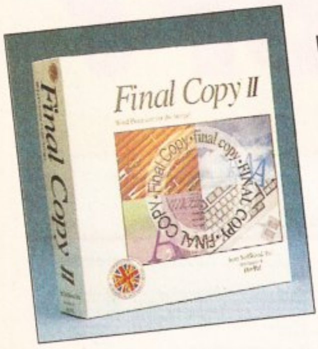
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Have the last word!



Well, the Final Copy, actually. Five lucky readers will get their hands on Final Copy II for free. This easy-to-use "word publisher" gives you all the power you need to create professional-looking documents.

Budding wordsmiths and designers will be interested in what's up for grabs in this month's bumper competition – five copies of the latest release of *Final Copy II*.

Produced in the States by leading software house SoftWood Inc., *Final Copy II* is distributed in the UK by Gordon Harwood Computers and retails at £99.95.

Final Copy II has all the features you'd expect from a state-of-the-art word processor – multiple rulers and multiple columns, full IFF graphics support up to 4,096 colours, a 110,000-word dictionary and 826,000-reference thesaurus, ARexx support, and much more. (For details, see *Amiga Shopper* 25.) The page printed here with the picture of a tiger on was produced using *Final Copy II* and output on a 24-pin colour dot matrix printer. As you can see, pictures can be imported, resized and cropped, and text can be run around or over the graphics.

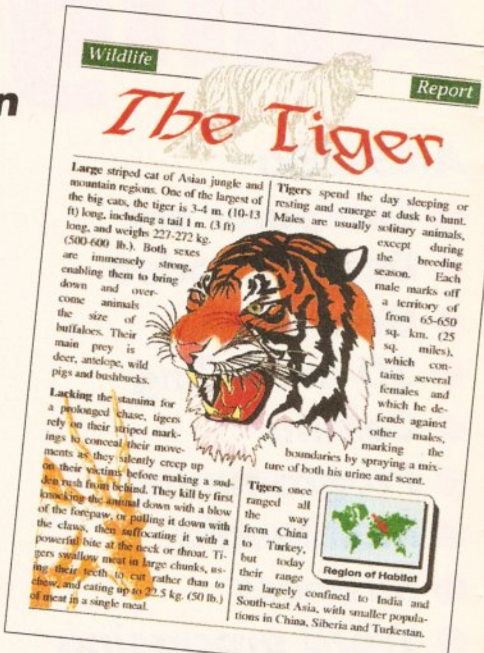
One of *Final Copy II's* best features is the ability to use scalable outline fonts. Support is provided for CompuGraphic, Adobe Type One PostScript and Nimbus Q PostScript fonts. These fonts are available on any Workbench-supported graphic printer. The minimum system configuration that you need to run *Final Copy II* is 1 Mb of RAM and two floppy drives (or a hard drive).

So, want to get your paws on a copy? Just answer the three easy-peasy questions on the right. The first five correct answers drawn on the closing date, Friday 9 July, win. Simple as that. (No multiple entries, no employees of Future Publishing or Gordon Harwood, and no arguments.)

Write your answers on a postcard (or the back of a sealed envelope), include your name, address, postcode and details of your Amiga and any peripherals. The address is:

Copy Deadline
Amiga Shopper
29 Monmouth Street
Bath BA1 2DL

Please state if you would rather not have your name included on a mailing list.



Wildlife Report

The Tiger

Large striped cat of Asian jungle and mountain regions. One of the largest of the big cats, the tiger is 3-4 m. (10-13 ft) long, including a tail 1 m. (3 ft) long, and weighs 227-272 kg. (500-600 lb.). Both sexes are immensely strong, enabling them to bring down and overcome animals the size of buffaloes. Their main prey is deer, antelope, wild pigs and bushbucks.

Lacking the stamina for a prolonged chase, tigers rely on their striped markings to conceal their movements as they silently creep up on their victims before making a sudden rush from behind. They kill by first knocking the animal down with a blow of the forepaw, or pulling it down with the claws, then suffocating it with a powerful bite at the neck or throat. Tigers swallow meat in large chunks, using their teeth to cut rather than to chew, and eating up to 22.5 kg. (50 lb.) of meat in a single meal.

Tigers spend the day sleeping or resting and emerge at dusk to hunt. Males are usually solitary animals, except during the breeding season. Each male marks off a territory of from 65-650 sq. km. (25 sq. miles), which contains several females and which he defends against other males, marking the boundaries by spraying a mixture of both his urine and scent.

Tigers once ranged all the way from China to Turkey, but today their range are largely confined to India and South-east Asia, with smaller populations in China, Siberia and Turkestan.

Region of Habitat

THE CHALLENGE • THE CHALLENGE

1. *Final Copy II* is distributed in the UK by:
(a) Gyles Brandreth
(b) Gordon Harwood
(c) Teak Hardwood

2. "Tyger! tyger! burning bright
In the forests of the night"
are the first lines from a poem by:
(a) William Blake
(b) Rudyard Kipling
(c) Tony Harrison

3. Which of the following is a serif font?
(a) Franklin Gothic
(b) Helvetica
(c) Times

IN NEXT MONTH'S FACT-PACKED ISSUE

- Make money with your Amiga! We'll be giving you ideas for how you can turn your Amiga to profit in every conceivable area: video, word processing, desktop publishing, graphics, programming, music, database management and more. We'll be including a whole host of general business tips, dealing with such things as tax, national insurance, accounting and even getting hold of grants to help you out. Can you afford to miss it?.
- A look at the new version of *Art Department Professional*.
- And a review of *Deluxe Music Construction Set II*.

Plus: regular columns on Amiga Answers, public domain, video, AmigaDOS, desktop publishing, programming, education, music, comms and much more

>>>> On sale Tuesday 6 July >>>>

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Pen Pal

A superb package, with immense power, to fulfil all your Word Processing needs, and... with an integrated Database too! It's all so easy to use, you'll rarely need to refer to the extensive 250 page lay-flat spiral bound manual. Users frequently tell us that they've never found a program they get on with so well.

THE WORD PROCESSOR: You can... Open multiple documents simultaneously; search and replace; cut, copy and paste; check your spelling with a 110,000+ word dictionary; import your favourite IFF/HAM graphics, from programs such as DPaint, or Clip Art files in various sizes and colours; automatically flow text around graphics in any Workbench compatible font (there are over 200 available styles) in different sizes and colours to suit your design... Even as you type! Full Page View with position, edit and creation of graphic objects and extremely useful forms designer. All this from a word processor and... Much, Much, More! As you can see from the documents shown on the left this is no ordinary program!

THE DATABASE: With 32 fields per record, 32,000 records per database and a fast sort of 1000 records in less than 5 seconds, this is a *real* database. Mail merging into the Word processor couldn't be simpler, with easy creation of templates for letters or reports, into which information can be merged.

AND... Remember, Pen Pal comes with full support for the new or experienced user completely free! Friendly help for all registered owners is just a phone call away.

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*With Pen Pal you're not just getting a one off product! SoftWood are acknowledged as the World's leading software company who develop **just** for Amiga and **no other** system. Once you're a registered SoftWood product owner your investment is protected as you'll have access to unlimited free technical support [others charge you] and preferential upgrades to other SoftWood titles, both existing and future. Exciting new products are being developed right now. Pen Pal - your first step on the SoftWood ladder of Amiga software*

Pen Pal is available from all good Amiga software Dealers or from SoftWood. Call for your list of stockists.

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Pen Pal is compatible with any Amiga from A500 ... latest A1200/A4000 ranges with a mi... of 1 Mb. available free m...

The PC1204 4MB Memory Expansion for the Commodore Amiga 1200.



Power Computing's innovative 4MB 32-bit memory expansion for the Amiga 1200 is now available. The PC1204 includes these many features:

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The XL 1.76MB Drive for the Commodore Amiga.



Power Computing's XL 1.76MB Drive* for any Commodore Amiga is now available. The XL Drive includes these many features:

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